APRIL 21, 1934

THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2.
Telegrams: LANCET, RAND, LONDON. Telephone: TEMPLE BAR 7228 and 7220

No. XVI. OF VOL. I., 1934. LONDON, SATURDAY, APRIL 21, 1934 Pp. 120—Price 1s.
No 5773. Vol. CCXXVI. Founded 1823. PUBLISHED WEEKLY. Registered as a Newspaper. Annual Subscription: Inland £2 2s. Abroad £2 10s.

LIBRARY OF CONGRESS NOV 13 1934 MEDICAL DIVISION

OXFORD MEDICAL PUBLICATIONS.
SEE PAGE 2

¶ "*This book should certainly make and keep for itself a place in urological literature.*"—LANCET.

UROLOGY IN WOMEN:
A HANDBOOK OF URINARY DISEASES IN THE FEMALE SEX.
By E. CATHERINE LEWIS, M.S. (Lond.), F.R.C.S. (Eng.), Surgeon to the Royal Free Hospital, Surgeon and Urologist to the South London Hospital for Women.
Size 6½×8½. Pp. viii.+73. With 4 Coloured Plates and 23 other Illustrations. Price 6s.; postage 5d.; abroad 9d.
Baillière, Tindall & Cox, 7 & 8, Henrietta-street, London W.C.2.

SELECTED WRITINGS OF
JOHN HUGHLINGS JACKSON,
M.D., F.R.C.P., F.R.S.
Two Volumes.
I.—EPILEPSY AND EPILEPTIFORM CONVULSIONS.
II.—EVOLUTION AND DISSOLUTION OF THE NERVOUS SYSTEM: SPEECH: VARIOUS PAPERS: ADDRESSES AND LECTURES.
Edited by JAMES TAYLOR, M.D., F.R.C.P.
With the advice and assistance of GORDON HOLMES, M.D., F.R.C.P., and F. M. R. WALSHE, M.D., F.R.C.P.
Over 500 pages in each vol. Price 25s. net each; postage extra (inland 9d., abroad 10d.).
Hodder & Stoughton Ltd., Warwick-square, E.C.4.

BY W. SAMPSON HANDLEY, M.S. LOND.,
F.R.C.S., Surgeon to the Middlesex Hospital.

CANCER OF THE BREAST AND ITS TREATMENT.
Second Revised Edition. With 82 Illustrations. 30s. net. (John Murray.)
THE GENESIS OF CANCER: A STUDY OF THE GENETIC RELATIONSHIP OF LYMPH-STASIS AND CANCER.
Just Published. 113 Illustrations. 21s. net.
(Kegan Paul, Anglo-French Library.)

DIAGNOSIS OF MENTAL DEFICIENCY.
By HENRY HERD, M.A., M.B., Ch.B.
Pp. 284. Demy 8vo.
Fully illustrated with 39 half-tone and 12 line blocks.
Price 12s. 6d. net.
"A concise and practical guide to the recognition of mental deficiency on modern lines."—PUBLIC HEALTH.
Hodder & Stoughton, Ltd., Warwick-square, E.C.4.

FRACTURES.
By MEURICE SINCLAIR, C.M.G., M.B., Ch.B. (EDIN.). With an Introduction by Sir ROBERT JONES, Bt., F.R.C.S.
Pp. 550. 337 X-ray photographs, photographs and diagrams. 24s. net.
Constable & Co., Ltd., London.

NOW PUBLISHED
RADIOTHERAPY IN THE DISEASES OF WOMEN.
By MALCOLM DONALDSON,
B.A.(Cantab.), F.R.C.S.(Eng.), M.B., Ch.B.(Cantab.).
Demy 8vo. 148 pp. 11 Illustrations in the Text; 2 Plates, one in Colour.
Price 7s. 6d. net; postage 6d.
Hodder & Stoughton Ltd., Publishers, Warwick-square, London, E.C.4.

DISEASES OF THE RECTUM AND COLON
AND THEIR SURGICAL TREATMENT.
BY
J. P. LOCKHART-MUMMERY
F.R.C.S. ENG., M.A., M.B., B.C. CANTAB.,
Senior Surgeon to St. Mark's Hospital.
Over Two Hundred Plates and Illustrations. Price 25s.
Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

DISEASES OF THE THYROID GLAND.
WITH SPECIAL REFERENCE TO THYROTOXICOSIS.
By CECIL A. JOLL, M.S., B.Sc., F.R.C.S. (Eng.).
Crown 4to. Fully Illustrated. £2 2s. net.
"No praise is too high for the author of this great book. It must be considered as the standard work on thyroid disease. Its pages summarise all that is known of this most interesting subject at the present day."—WEST LONDON MEDICAL JOURNAL.
William Heinemann (Medical Books) Ltd., 99, Great Russell-street, London, W.C.1.

ANATOMY IN THE LIVING MODEL.
By DAVID WATERSTON, M.A., M.D., F.R.C.S.E., F.R.S.E.,
Bute Professor of Anatomy in the University of St. Andrews.
Pp. 276. 74 Illustrations, 16 coloured plates. Price 21s. net.
". . . It is very readable, and we can recommend it with confidence to students and also to practitioners."
—CANADIAN MED. ASSOC. JOUR.
Hodder & Stoughton, Ltd., 20, Warwick-square, E.C.4.

ULTRA-VIOLET THERAPY IN EYE DISEASE. With a Review of the Action of other Forms of Radiant Energy.
By FRANK W. LAW, M.A., M.D., B.Chir., F.R.C.S.
Foreword by SIR STEWART DUKE-ELDER, F.R.C.S.
5s. net.
Published for the Middlesex Hospital Press by John Murray, 50, Albemarle-street, London, W.1.

THERAPY OF PERSONAL INFLUENCE.
By EDWIN HOPEWELL-ASH, M.D. Price 2s. 6d.
Various psycho-physical methods illustrated by cases.
Obtainable from BM/ELHA, London, W.C.1.

JOHN BALE, SONS & DANIELSSON, LTD.

A TREATISE ON KALA-AZAR. By UPENDRANATH BRAHMACHARI, K.-I.-H. (Gold), Rai Bah dar, M.A., M.D., Ph.D. 13 Plates (7 Coloured), 21s. net; post free inland 21s. 9d., abroad 22s. 10d.
"Embodying all the latest facts known about the probable transmission of the disease and its treatment."—INDIAN MEDICAL GAZETTE.

AN ATLAS OF SKIN DISEASES IN THE TROPICS.
By E. C. SMITH, B.A., M.D.(Dublin), D.P.H., D.T.M. & H.(Eng.). 21s. net; post free inland 21s. 9d., abroad 22s. 6d.
"The book is a real treasure."—THE LANCET.
"Should be in the hands of those who are likely to work in the tropics and all dermatologists."—BRITISH MEDICAL JOURNAL.

THE CARE AND FEEDING OF ADULTS with Doubts about Children. By LOGAN CLENDENING. Post free 6s. 6d.
"We have greatly enjoyed reading this book."
—MEDICAL OFFICER.

THE SEXUAL LIFE OF MAN. An Outline for Students, Doctors, and Lawyers. By DR. PLACZEK, Neurologist in Berlin. Second edition, considerably changed and enlarged. Translated by Leslie Stuart Morgan, M.R.C.S., L.R.C.P. 12s. 6d. net; 13s. post free.
"If the practitioner's library does not contain one of the older works on this subject, then we strongly advise him to accord a place to this very excellent translation."—JNL. OF CLIN. RES.

YOUR SERVANT THE DOCTOR. By G. P. (W. B. COSENS). Price 7s. 6d. net; post free 8s.
"200 pages of brightly written advice."—TIMES LIT. SUPPL.

STORY OF A SURGEON: Robert and Clive. By CLAIR COPE. Price 3s. 6d. net; post free 4s.
"This book is of absorbing interest."—MEDICAL TIMES.

CRIMINAL ABORTION. By L. A. PARRY, M.D., B.S., F.R.C.S. 11s. 3d. post free.
"A very important and acceptable contribution to a subject of highly topical interest."—MEDICAL TIMES.

83-91, GREAT TITCHFIELD ST., LONDON, W.1

Dyspepsia after Tea!

Here is one of the many hundreds of Medical testimonials as to the value in Dyspepsia of "**Ty.phoo**" tea, with its rich mild "leaf-edge" preponderance.

"I have recommended 'Ty.phoo' tea to several of my patients suffering from dyspepsia with good results, and shall continue to recommend it whenever it is indicated."

A large free sample of "Ty.phoo" tea will be posted to any practitioner who has not tried it.

Over 14,000 Doctors are direct purchasers of this tea from us.
Sumner's "Ty.phoo" Tea, Ltd.
Medical Dept., Birmingham 5.

LESLIES ZŌPLA STRAPPING
(Zinc Oxide Plaster)

Powerful grip—no slipping

Thoroughly pliable

Consistently good

Strong White and Flesh Cloths, White Felt, etc. Samples on request

ZŌPLA—BAND
(Elastic Plaster Bandage)

Excellent for varicose veins, ulcers, sprains, etc., and where an elastic cloth is desirable

All widths from 1 inch

Cream and Flesh colour

Manufactured by LESLIES LTD., High St., Walthamstow, London, E.17

Felsol *for*

SPASM OF PLAIN MUSCLE

ASTHMA
ANGINA PECTORIS
DYSPNŒA OF PHTHISIS

Felsol relieves QUICKLY and CERTAINLY.
Felsol is ALWAYS READY FOR USE.
Felsol contains NO NARCOTICS.
Felsol consists of Powders for oral administration.

Literature and supply for clinical test from

BRITISH FELSOL COMPANY LTD.,
15, Caroline Street, London, W.C.1

Telephone Museum 2855

Telegrams Felsol, Westcent, London

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, CHEMISTRY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS

No. 5773 LONDON, SATURDAY, APRIL 21, 1934 CCXXVI

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ADDRESSES AND ORIGINAL ARTICLES

Industrialised Man and His Background. By LEONARD P. LOCKHART, M.D. 825

The Adrenogenital Syndrome. By L. R. BROSTER, F.R.C.S.—(*Illustrated*) 830

The Lysis of Fibrin by Streptococci: Its Application to the Problem of Rheumatic Infection in Children. By Prof. G. HADFIELD, F.R.C.P., V. MAGEE, M.B., and C. B. PERRY, M.R.C.P.—(*Illustrated*) 834

Treatment of Profuse Bleeding from the Stomach and Duodenum. By R. S. AITKEN, M.R.C.P. 839

Carcinoma of the Rectum. By D. C. L. FITZ-WILLIAMS, F.R.C.S. 842

Thrombopenic Hæmorrhagic Purpura due to Idiosyncrasy towards the Hypnotic Sedormid. By F. E. LOEWY, M.R.C.P. 845

Paper Films in Radiography. By J. V. SPARKS, D.M.R.E., M.R.C.S. 847

MEDICAL SOCIETIES

Ophthalmological Society: Surgical Treatment of Squint and Heterophoria 848

REVIEWS AND NOTICES OF BOOKS

Obstetrics and Gynecology. Edited by Prof. A. H. Curtis, M.D. 851

Science of Radiology. Edited by Otto Glasser, Ph.D. 851

Four and a Half Years. By the Rt. Hon. Christopher Addison, M.D. Vol. II. (1917–19) 851

Red Medicine. Socialized Health in Soviet Russia. By Sir Arthur Newsholme, M.D., and J. A. Kingsbury, LL.D. 852

Introduction to the Vertebrates. By L. A. Adams 852

Pharmacopœias and Formularies. By C. J. S. Thompson 852

Lord Lister. By C. J. S. Thompson 852

LEADING ARTICLES

RESISTANCE TO STREPTOCOCCAL FIBRINOLYSIS IN RHEUMATIC CHILDREN . 853

SPECTACLES OF CRUELTY . 853

THE RECOGNITION OF CHIROPODY 854

THE BUDGET 855

ANNOTATIONS

Poison-gas from the Air ... 856

Ultra-violet Radiation for Erysipelas in Children .. 856

Pink Disease 857

A Brave Career 857

Detection of Deafness in School-children 857

Ætiology of Agranulocytosis 858

Mortality from Appendicitis 858

Nerve-grafting for Facial Palsy 859

Measles Serum 859

Refugee Scientists 859

The Virus of Mumps 860

SPECIAL ARTICLES

Medicine and the Law: Blood Test Offer in Affiliation Proceedings . 862

Ireland: Conditions in the Army Medical Service of the Irish Free State 862

NEW INVENTIONS

A Trocar and Cannula for the Injection Treatment of Hydrocele. By R. MAINGOT, F.R.C.S.—(*Illustrated*) 850

PROGNOSIS

III.—Tuberculous Laryngitis. By HAROLD BARWELL, F.R.C.S. 861

CORRESPONDENCE

Safe Milk (Major H. C. Lings) 863

The Prevention of Cancer (Dr. M. F. Sorour) 863

Gall-stones and Cardiac Pain (Dr. F. J. Poynton) 865

Malnutrition (Dr. Helen Jardine and others) 865

The Blood-brain Barrier in Infectious Diseases (Dr. E. W. Goodall, Dr. B. A. Peters) 866

Human Blood-serum for Septicæmia (Prof. F. T. Cadham) 867

Tobacco Smoking and Duodenal Ulcer (Dr. S. G. Askey) 867

Hypnotism (Mr. J. Louis Orton) 867

OBITUARY

Frances May Dickinson Berry, M.D.—(*With portrait*) 868

Cecil William Cunnington, M.R.C.S. 868

The late Dr. Stanley Melville 868

PANEL AND CONTRACT PRACTICE

A Review of National Health Insurance 869

PUBLIC HEALTH

Puerperal Sepsis 869

Infectious Disease in England and Wales 870

THE SERVICES

Royal Naval Medical Service.—Army Medical Service.—Royal Army Medical Corps.—Royal Air Force 867

PARLIAMENT

Notes on Current Topics: Road Traffic Bill.—The Budget Statement 870

House of Commons: Provision of Meals for School-children.—Pensions and Institutional Treatment.—Slum Clearance.—Health Insurance: Medical Benefit.—Small-pox at Blackburn 872

MEDICAL NEWS

Royal College of Surgeons 874

University of London 874

Hospitals for Women and Children 834

Bristol Hospitals 846

Donations and Bequests .. 847

Aberdeen Royal Infirmary 850

Adult Convalescent Homes for Liverpool 850

Soviet Institute of Experimental Medicine. 855

Course on Mental Welfare 860

Charing Cross Hospital ... 867

Metropolitan Hospital 874

Salford Royal Hospital ... 874

Medical Tour in the Rhineland 875

Society for Relief of Widows and Orphans of Medical Men 875

Institute of Medical Psychology 875

NOTES, COMMENTS, AND ABSTRACTS

Peter de Alcobasse, Physician to Henry IV. By R. R. JAMES 877

Radiography of Living Anatomy 877

Acute Sepsis in Throat and Ear 878

The La-Toja Spa 878

Is Pasteurisation a Complete Safeguard? 878

New Preparations: Antivirin Nasal Jelly—Burnol Acriflavine Cream 878

Medical Diary 875

Appointments 876

Vacancies 876

Births, Marriages, Deaths 876

THE LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY LIMITED

(FOUNDED 1892)

President: Sir JOHN ROSE BRADFORD, Bart., K.C.M.G., C.B., C.B.E., M.D., F.R.C.P., F.R.S.

Trustees for the Reserve Fund:

Rt. Hon. LORD DAWSON, P.C., G.C.V.O., K.C.B., M.D., F.R.C.P. Sir JOHN ROSE BRADFORD, Bart., K.C.M.G., C.B., C.B.E., M.D., F.R.C.P., F.R.S. Sir SQUIRE SPRIGGE, M.D., F.R.C.P., F.R.C.S.

The Society was founded for the following purposes: To protect, support, and safeguard the character and interests of legally qualified Medical and Dental Practitioners; to advise and assist Members of the Society in matters affecting their professional character and interests; and to indemnify them in regard to actions, etc., undertaken on their behalf.

The Society is insured with Lloyd's Underwriters to an unlimited extent in respect of all adverse costs and damages awarded against Members in any action which the Society undertakes on their behalf.

Annual Subscription: £1. Entrance Fee: 10s. Assets exceed £60,000.

No entrance fee to those joining within 12 months of registration.

Full particulars and forms of application for membership from the Secretary, Victory House, Leicester Square, W.C.2.

Telephone: GERRARD 4814.

OXFORD MEDICAL PUBLICATIONS

JUST PUBLISHED :—

THE ANAEMIAS

By JANET M. VAUGHAN, D.M.Oxon., M.R.C.P. Lond.,

Beit Memorial Fellow, the Bernhard Baron Institute of Pathology, the London Hospital; late Assistant Clinical Pathologist, University College Hospital; Assistant Clinical Pathologist the Royal Northern Hospital; Rockefeller Travelling Fellow, the Thorndike Memorial Laboratory, Boston City Hospital, Boston, U.S.A.

WITH NOTES ON NORMAL AND PATHOLOGICAL ERYTHROPOIESIS

By HUBERT M. TURNBULL, D.M. Oxon., F.R.C.P. Lond.

Director of the Bernhard Baron Institute of the London Hospital.

CONTENTS INCLUDE —

NORMAL ERYTHROPOIESIS
CLASSIFICATION OF THE ANAEMIAS
DEFICIENCY DYSHAEMOPOIETIC ANAEMIAS DUE TO LACK OF IRON
DEFICIENCY DYSHAEMOPOIETIC ANAEMIAS DUE TO LACK OF THE PERNICIOUS ANAEMIA OR P.A. FACTOR
DEFICIENCY DYSHAEMOPOIETIC ANAEMIAS DUE TO LACK OF VITAMIN C AND THYROXIN
TOXIC DYSHAEMOPOIETIC ANAEMIAS
UNEXPLAINED DYSHAEMOPOIETIC ANAEMIAS
POST-HAEMORRHAGIC ANAEMIAS
HAEMOLYTIC ANAEMIAS
UNCLASSIFIED ANAEMIAS
BIBLIOGRAPHY
INDEX

Pp. 260. 24 Illustrations. **12s. 6d.** net.

Some Recent Issues :—

TEXT-BOOK OF THE PRACTICE OF MEDICINE. By Various Authors, edited by **FREDERICK W. PRICE**, M.D., F.R.S.Edin. 4th Ed. Pp. 2040. 106 Illus. **36s. net.**

APPLIED PHYSIOLOGY
By **SAMSON WRIGHT**, M.D., F.R.C.P. 5th Ed. Pp. 636. 195 illus. **18s. net.**

THE DIET BOOK, for Doctor, Patient, and Housewife.
By **MARGUERITE REQUA REA**, with Foreword by **Sir JAMES PURVES-STEWART** 2nd Ed. Pp. 224. **6s. net.**

A SHORT HISTORY OF SOME COMMON DISEASES.
By **SIXTEEN CONTRIBUTORS**, Edited by **W. R. BETT**, M.R.C.S., L.R.C.P. Pp. 211. **10s. 6d. net.**

DISEASES OF THE NERVOUS SYSTEM. By **W. RUSSELL BRAIN**, M.A., D.M., F.R.C.P. Pp. 915. 51 Illus. **27s. 6d. net.**

OPERATIVE SURGERY. By **ALEXANDER MILES**, M.D., LL.D., F.R.C.S., and **D. P. D. WILKIE**, M.D., F.R.C.S. Pp. 608. 321 Illus. **21s. net.**

BONE GROWTH IN HEALTH AND DISEASE. By **H. A. HARRIS**, D.Sc., M.B., B.S., M.R.C.S., M.R.C.P. Pp. 263. 259 Illus. **34s. net.**

PARALYSIS IN CHILDREN. By **R. G. GORDON**, M.D., D.Sc., F.R.C.P., and **M. FORRESTER-BROWN**, M.D., M.S. Pp. 336. 116 Illus. **15s. net.**

COMPLETE CATALOGUE OF MEDICAL BOOKS FREE ON REQUEST

Oxford University Press

HUMPHREY MILFORD AMEN HOUSE LONDON, E.C.4

ADDRESSES AND ORIGINAL ARTICLES

INDUSTRIALISED MAN AND HIS BACKGROUND*

By Leonard P. Lockhart, M.D. Camb.

MEDICAL OFFICER, MESSRS. BOOTS PURE DRUG CO., LTD., NOTTINGHAM; MEMBER INDUSTRIAL HEALTH RESEARCH BOARD

Not only in and around the main industrial centres but wherever economic life depends upon organised production and distribution there are certain aspects of industrial medicine which are also problems of general practice. With the possible exception of Greece in her prime medicine has rarely looked upon man's occupations with anything akin to approval. She has seen in them not so much a synthesis of mental, physical, and hygienic progress as a struggle carried on under conditions which did little to raise the level of the workers' lives. Ramazzini in the latter half of the seventeenth century noted occupational mutilations, poisonings, and ill-health, but we look in vain at contemporary social history for any constructive and preventive response to his disclosures. This apathetic attitude towards a great human problem was common to most social systems between the development of industrial technique and the coming of preventive medicine. To-day, however, occupational hazards are not merely recorded; they are studied and prevented in such a way that soon industrial disease ought to have been conquered.

Rationalisation of Industry

The solution of one problem is, however, but the beginning of another, which concerns not so much the prevention of occupational ill-health as the evolution of means whereby all work shall conduce towards a synthesis of mental, physical, and economic well-being in a social system where the rapid extension of applied science in daily life tends to falsify all predictions based on traditional data. We tend to regard this new order as beneficial or objectionable largely in terms of our personal reactions, but whether we manage to utilise it for man's progress or for his destruction depends entirely on the evolution and spread of ideas at present alien to the bulk of mankind.

Labour-saving machinery has increased, leading to the expansion of light industries and to the industrialisation of former handicrafts. There is a resulting tendency to employ less men and more women. Luxuries have gradually become popularised and standardised. An increasing proportion of employed persons are providing services as distinct from producing goods, while selling and distribution is almost an industry in itself. The power of the press, radio, and cinema in disseminating ideas or in manipulating mass emotions is enormous and the repercussions on employment and occupation incalculable. Clerical work is mechanised on almost an industrial basis and the potential output of each worker has been raised to the point at which increased non-working time, in the absence of vastly increased consumption both of services and goods, becomes almost inevitable either as unemployment or as increased leisure. The need for efficiency has called forth rationalisation with the unavoidable imposition of standardised methods of work, but the consequent reduction of individual scope has been somewhat offset by higher earning capacity and shorter hours. The larger organisations become the more must power be concentrated in fewer hands and rationalisation unwisely applied can almost sterilise an organisation of initiative and individuality. Rationalisation seems, however, to be a condition of survival in any highly technical society, and even medicine is not immune. We must, therefore, attempt some evaluation not only of its beneficial and pathological effects on health, but also of those attributes of it which we can utilise in the furtherance of preventive—or as Lord Horder puts it—constructive medicine.

BUT THE INDIVIDUAL WORKER HAS NOT CHANGED

A system which has evolved to the point of relieving man of much of his physical burden and of giving him a phenomenal power over the forces of nature has at the same time imposed a great and growing psychological burden. Looking at developing industrialism we might believe that man had taken certain tremendous strides and was capable of undertaking purely intellectual mental processes more or less divorced from emotional and instinctual traits. There is very little evidence to support this theory. Man may be more knowledgable, more richly endowed with technical skill, more capable of exercising power over the forces of nature, more adept at covering himself with a veneer of culture, but he is no more able to banish fear, jealousy, aggressiveness, or curiosity than were his nomadic forbears; nor does he appear to have grown markedly in wisdom. We have more complex means of expressing ourselves, more varied ways of masking our reactions and, moreover, we live in a world more pregnant with possibilities for touching up our emotional reactions—otherwise man is much the same. The conditions of the environment have, however, changed rapidly and changed fundamentally.

There are material advances such as better housing, clothing, transport, and food, but along with these there are factors which gravely disturb that sense of security and stability which is, in reasonable degree, so essential to physical and mental health and development. Rapid changes in means of production, in demand for particular goods, in organisation, and in ownership operating on an international scale hitherto unknown, have reduced work and employment for many to a precarious position. Uncertainty and a sense of insecurity may be inseparable from a phase of transition but they generate unhappiness and ill-health. Young men are having a very hard time to-day. Many jobs that formerly they could have done are now done by women with the aid of machines, while in the heavy industries, owing to immense world increases in production, employment is slack. It is no solution to replace women by men. Many of the jobs done to-day by women are not suitable for men. A man or boy is looking for a job for life on which to support a family. A girl wants a job until she marries, and quite apart from differences in pay is satisfied with a type of work that cannot possibly give satisfaction to a man. Other solutions than mere substitution must be found, but the fact that among general labourers one finds certificated officers of the Merchant Service shows how the channels for zeal and adventure are narrowed in our present state of economic transition. The disillusionments and harm done by short-term blind-alley occupations constitute another major problem, and militant political youth organisations abroad show how widespread is the need for outlets for male youth.

* Substance of an address delivered before the Bournemouth Medical Society, Feb. 14th, 1934.

Some Clinical Data

With these points in mind let us consider some clinical data. Every year about 50 per cent. of the insured population go sick for an average of very nearly four weeks each, resulting in the loss of over half a million years of working time. This excludes the first three days of absence and it takes no account of loss sustained by those who remain at work and yet are relatively unwell and below normal efficiency.

Unfortunately there is no large scale analysis of the certified diagnoses and we are therefore driven back, not to analyse official figures but rather to consider what we mean by the labels we attach to patients for certification purposes. My thesis is that since the law requires diagnoses limited to one or two words it gets what it demands, but that these stereotyped descriptions of highly complicated processes are with few exceptions valueless to the student of social problems. The certificates deal largely with symptoms or with symptom-complexes to which orthodox labels have been given. They do not necessarily convey the real and often complicated clinical picture. They are not notes for a medical registrar. They are merely evidence that a person is ill and is entitled to sick benefit. Let us regard them in that light and not try to deduce clinical information from what is in effect an order to pay out money.

In a large proportion of instances the certified disease is not a clinical entity but the overt sign of a more fundamental disturbance, and because a patient suffers from gastric pain, lumbago, tachycardia, or frontal headache it is not, as I am sure you will agree, at all certain that he or she is suffering from organic disease of the stomach or heart or that rheumatism or eyestrain can be accepted as a satisfactory label. Rather are there in countless cases underlying causes which should remove the diagnosis into a totally different category. Dr. Maurice Cassidy, speaking as a consulting cardiologist (Brit. Med. Jour., 1934, i., 45), says that 29·5 per cent. of cases referred to him are psychoneurotic in origin. The symptoms are cardiac but the causative factors lie in the realm of psychological medicine. As with hearts, so I submit with many other things, particularly gastric cases. Further, a patient may have pneumonia or appendicitis or a fractured leg, and may be sick for a number of weeks. Is it statistically correct to label that patient with the original diagnosis for the full run of his or her absence? For the purposes of everyday practice it is, since differentiation is clinically difficult and administratively impossible, but it is not giving us a true picture of the patient's condition so to label it all the time. Most sickness statistics unless accompanied by a full clinical history of each patient can be, and I think are, misleading. We shall never get a true picture of the actual position in regard to the seventeen odd millions of people under N.H.I. We can, however, get accurately assessed samples. We can note significant points in special researches and can draw conclusions within a reasonable margin of error. When we get such an insight into representative samples we find gaps in our judgments of the so-called minor ailments—ailments which for producing inefficiency, unhappiness, and widespread secondary effects far out-distance the more spectacular, less frequent but objectively graver illnesses.

SICK ABSENCE DEPENDENT ON EMOTIONAL ENVIRONMENT

In 1927 the Industrial Fatigue Research Board (M.R.C.) (now the Industrial Health Research Board) began investigations into the various factors which operate within industry and commerce to raise or lower sick absence rates. The clinical and statistical difficulties encountered are set out at length in the various reports of the Board, but the conclusions reached by Prof. Millais Culpin and Dr. May Smith, who with the help of Prof. Major Greenwood carried out the bulk of this work for the Board, point to the fact that, leaving acute upper respiratory tract infections out of the picture, the amount of sick absence in any organisation is affected profoundly by conditions not of physical but of emotional environment. In the twelfth annual report of the Board the following summary is given:—

> "Although it has not been found possible as yet to isolate in particular cases the causative factors in sickness absenteeism, yet there is evidence to support the hypotheses that a high rate may be expected where the following occur: (1) rigidity of conditions; (2) routine work offering few prospects of promotion for intelligent workers; (3) clerical as against productive or organising work; (4) badly selected departmental heads; (5) anomalies of payment" (p. 25).

Apart from conditions of work and life there is another important factor—namely, the susceptibility of individuals to these conditions. In reviewing large numbers of workers in different occupations, Culpin found that some 50 per cent. of all persons studied—not sick persons but total staff—showed on investigation definite signs of nervous instability and that "there is a tendency for the nervous people to have more sick leave, not necessarily of the type diagnosed as nervous" (Rep. 61, p. 43). Farmer and Chambers (I.H.R.B., 11th Ann. Rep., p. 53) found the same correlation between nervous instability and a high accident rate.

The investigator in this work must have access not only to the documents but to the patients themselves and to their places of employment, and be able to interview large numbers of the staff who do *not* report sick. These are the essential requirements in any survey of the social and economic influences at work on the health of an industrial population. Such results as I personally have obtained, studying a mixed commercial and industrial population of some 17,000 male and female workers over a period of nine years, support in nearly every significant particular the work done by the Board and its investigators.

Apart from seasonal epidemics, sick absence varies not so much with occupation as with places of employment. It may vary within wide limits from as low as 2 days per person per annum to as high as 15. The variations are such that firm A and firm B in the same town, engaged in the same type of work and in other ways more or less comparable may present figures more or less steady year by year and yet differing widely between A and B. Large annual variations within a given group are rare but between groups they are common. These rates may, and indeed do, bear little or no relation to those of the general population surrounding them.

CORRELATION WITH LABOUR TURNOVER

If we search for a factor to correlate with the rates of sick absence we find a significant one in labour turnover, and it appears as definite that a high sickness rate and a high labour turnover go together. There are two main exceptions: (1) If a firm automatically dismisses its sick employees then it will have a high labour turnover rate but a low sickness absence rate; (2) in certain other occupations where labour turnover is low sick absence is relatively high. The explanation in these cases is not so simple. While fatigue, dislike of the work, and general dis-

content will tend to a high sick absence rate, and while a degree of security is necessary for happiness and health, *complete* security is rather a double-edged weapon. There must, it is true, be the minimum of factors tending to unease a staff if you would keep your sick rate low, but so too there must be no insurmountable obstacles in the way of reasonable change of occupation within the organisation nor to the desire to leave it altogether should the urge arise. If then in a well-run organisation you institute, say, a pension scheme on terms that make severance of connexion inseparable from financial loss, and if too you put people on a set of occupational rails that they cannot leave even for a parallel set during the whole course of their working life, and if further you institute a purely seniority system of promotion you may, and indeed in most cases you do, find a disproportionate amount of sick absence. A condition will have been set up which Culpin has termed "rigidity of occupational conditions" and this, just as much as insecurity, fatigue, and discontent or dislike of the work, leads to increased sick absence. Briefly, an organisation run on enlightened lines will tend to have a low sick absence rate more or less in proportion to the amount of scope available for reasonable ambition and individual effort.

RELATION TO INCENTIVES

Sickness varies too according to the system of incentives incorporated in the payment of wages. It is generally higher for staff employees than for those "on the clock." It goes up along with the accident rate when overtime is worked consistently for long periods. It falls, quite apart from any money incentives, when the department or firm is called upon to make a special effort and tends to rise slightly afterwards if the effort has been prolonged. Short spurts may reduce sick absence without a corresponding rise to follow. I submit that these facts, not in one firm nor in one service but in many firms and covering many thousands of workers, point to some causative agents for much of our sickness which do not yield their secrets to the radiologist, the pathologist, nor to the physician who thinks of a patient isolated from his environment in terms mainly of organic disease. The results of extensive investigations suggest that we are not dealing with physical disease so much as with symptoms of ill-health, not necessarily physical all the time or even fundamentally any of the time. There is a profoundly significant suggestion that much, very much, of it is psychoneurotic in origin, even if its overt form simulates organic disease. I would go so far as to assert that well over half the time lost among the insured population due to ill-health is psychoneurotic. I do not suggest that half the *cases* are of this nature, but half the lost time is, I believe, to be explained mentally rather than physically. The time taken to recover full function even after such a disorder as a fractured radius or a lobar pneumonia depends to an extent, too little recognised, not only on the patient's temperamental make-up but on the emotional background of the home and of the conditions of employment.

Does malingering play an important rôle in producing and prolonging absence from work? Except as an odd case in special circumstances I cannot see what incentive there can possibly be for anyone willingly to forego wages for sickness benefit and risk in addition the possible loss of his or her job. When the time comes for sickness benefit to fall to the level of disablement benefit a large proportion of persons "sign off" and return to work, but that can be better explained along other lines. I suggest two explanations which will cover nearly all such cases. In the first place the patients who make this sudden decision to return to work at the end of 26 weeks are almost invariably cases of frank psychoneurosis or of organic disease or trauma which has passed into a psychoneurotic phase. In the absence of treatment directed towards the solution of their mental problems they hang on hoping to feel better, and finally, faced with no prospect of complete cure by physical means, and finding that they cannot live on their disablement benefit, they choose the lesser of two evils and return to work. Their subsequent history is often one of economic inefficiency lasting many more months. The second explanation is that sympathetic understanding without self-discipline is as detrimental to a patient as hard discipline with no understanding. If either the doctor or the employer is unwise in the giving of indiscriminate sympathy sickness can be indefinitely prolonged and only terminated by economic hardship. Correct diagnosis and appropriate treatment ought to eliminate both these categories. It is not correct, however, to call these people malingerers.

Emotional and Instinctual Reactions

It is necessary to be quite clear that we are discussing a problem in social medicine and that the sincerity of the medical certificate which is given by the doctor in a fiduciary capacity is not being called in question. If any blame is to be attached let it be to a system of medical education which ignores occupational, social, and domestic environments, and emotional and instinctual reactions to them.

The following diagnoses are common—nerves, nervous or general debility, anæmia, and neurasthenia. They are all unfortunate, particularly the last two, for the anæmias generally have normal blood counts and the label of neurasthenia sticks closer than a brother. While many may forget for what a particular abdominal scar once stood, no one ever forgets once he is labelled neurasthenia. It is a highly respectable, sympathy-producing condition. It tends to become a continually recurring excuse for evading life's responsibilities and it should never be hastily nor lightly diagnosed. The bulk of the cases are anxiety states and should be dealt with as such, but the word "neurasthenia" is a very harmful one. The difficulty of fixing the correct label to many of these cases must be admitted because, while a patient may forgive his doctor for misdiagnosing pneumonia as appendicitis, he finds it very hard to forgive him for writing anxiety neurosis or emotional dysfunction on the certificate. Moreover, if the doctor does this it is not long that his patient is left in peace, since bureaucracy still too often regards psychological ill-health as a crime, while very few approved societies admit even the existence of psychotherapy. Patients and officials demand something concrete and physical even if it is wrong, rather than something correct obtained at the price of an abstract diagnosis; but the problem is a very real and urgent one since the patient takes his cue from the written certificate and expects to recover only as a result of treatment directed towards the cure of the stated disease.

The Regius Professor of physic at Cambridge has recently been pleading for a psychological outlook on such disorders, but the lack of a biological outlook in administrative circles is one of the great obstacles; a similar lack in the patient, and especially in his employer, can cause a doctor many difficulties, but if we take a firm stand even approved societies must eventually come into line. Financially they have

everything to gain and nothing to lose by doing so. Some have done so already.

It would be impossible for any practitioner to carry out adequate psychotherapy on all the patients who needed it. The time factor would rule such a proposal out of court, but if we regard the sickness problem as largely capable of evaluation in psychological terms we shall have gone a long way towards the solution of one of the economic problems of our time. We are not only concerned with persons who actually incur loss of time and earning capacity, but with an even larger body of people who, though they remain at work, experience times of relative inefficiency, often long and not infrequent.

Modern economic life demands qualities in those who bear its responsibilities, even if in quite a humble sphere, wholly different from the qualities which made for success and efficiency in the premechanical days. Much of the best work in the world, as Dr. J. R. Rees reminds us, is done by neurotics and much of the control of their work is in the hands of people who do not understand this. Moreover, intense competition has produced a tension throughout the whole industrial and commercial structure.

THEIR DIAGNOSIS

I do not think that many of us can lay our hands on all the data necessary for making a diagnosis where the function of organs is impaired by processes other than obvious and demonstrable organic disease. The private doctor knows the home life and often the early childhood and upbringing of his patients, but he cannot know much, if anything, about their working lives unless he is fortunately placed. Where industry has taken upon itself to establish its own medical service the industrial doctor can supply the private practitioner with an entirely new facet of the problem and the two working together do, I think, stand a much better chance of arriving at the correct solution than if each should work in ignorance of the other.

If modern economic development is the foster-parent of psychoneurotic ills it is also the means whereby groups are formed sufficiently large to enable this joint medical enterprise to develop. It should prove of great value in the evolution of preventive or constructive medicine. The doctor attached to a large organisation has as great an opportunity as the general practitioner if he will but use it. He knows a corporate society (for such is a large modern firm) sufficiently well to assist in making the most of each individual's abilities and he can place at the disposal of the private practitioner facts and opinions which are often essential to correct diagnosis. Industrial and private medicine are not competitors but essential allies and co-partners.

It is true that there are only about fifty whole-time industrial doctors in this country, but just as industry and commerce are as vital to healthy living as the schools, so industrial medicine will ultimately spread just as school medicine has done. In the meantime, hosts of small firms would gladly employ the services of a local practitioner for a few hours a week if employers felt that we as a profession were determined to study and grasp the problems of industry and commerce. We ignore these things in our medical education and very few develop interest afterwards. The gulf between the consulting-room and the office, factory and shop is wider and deeper than we care to admit.

AND THEIR TREATMENT

If we concede, as we must, that psychotherapy should only be attempted in its more elaborate forms by competent clinical psychologists, there yet remains a vast amount of work to be done on quite simple lines by such a coöperative partnership as I have mentioned. I refer to that mass of clinical material which, whether at work or on sick leave, suffers from what the patient describes as nerves, depression, anæmia, or even as "just proper run down." It includes cases of cardiac dysfunction, dyspnœa, neuritis, and of aches and pains innumerable. Insomnia, indigestion, and irritability form a very imposing rearguard to a list by no means complete. In my own sphere I see about a thousand such cases a year. That is in an organisation with a low sickness rate, a happy contented staff, and first-class management. Evidence is plentiful as to the widespread nature and importance of these so-called minor ailments and to the extensive unhappiness and misery that they cause. In the bulk of cases there is a disturbance of emotional balance due to causes which may be simple or complex, serious or trivial—i.e., to the observer; for to the patient nothing can be trivial which deprives him or her of the full enjoyment of health and happiness. Perhaps it is the fear that others will regard these things as trivial which causes patients to be so reticent about them. Hence the importance of a highly trained nursing staff in industry to make the necessary contacts and to bring the cases to notice.

We may admit that the seeds of disturbance and maladjustment are laid in early childhood and that occupational factors only act as detonators to a charge already laid but, be that as it may, simple measures will often effect a cure. By cure I mean a sufficient degree of insight on the part of the patient to enable him or her to acquire psychological immunity.

Three Common Types of Disorder

The obsessional, the anxiety, and the hysteric are the three common types and it is to Millais Culpin and May Smith that industry owes a great debt for making us recognise their significance in a highly organised environment.

(1) The obsessional with his unreasoning drive in regard to work, hyperconscientiousness, *sentiment d'incomplétude* of Janet, compulsions, repetitions, and feeling of uncertainty. The patient who must go through work several times (often a fixed number of times) and has the utmost difficulty in leaving a job that he knows to have been quite satisfactorily and conscientiously finished; who dislikes observation and is generally a person of great reliability, thorough rather than brilliant. When he breaks down it is attributed to overwork, whereas the breakdown, and in extreme cases the suicide, are, together with the excessive urge to work, only symptoms of a deeper psychological state.

(2) The anxiety type is apprehensive and often states that when faced by superiors he loses control of his thoughts. The type who may regard all subordinates as constituting a hypercritical judgment on his actions, and who consequently fails in positions of authority or who breaks under the strain of controlling his feelings, who imagines at all times a most improbable worst except, as in some cases quoted by Raymond and Janet, when he knows he has done something worthy of censure. These patients specialise in so-called D.A.H., tachycardia, and epigastric pain.

(3) The hysterical type is largely recruited from Jung's extrovert class who find in physical symptoms their escape from intolerable situations whilst saving their *amour propre* intact. "No, I didn't take that post—you see I had awfully bad luck—I was ill at

the time." Is not that illness the result of being offered promotion to a job which the patient knew he was incapable of filling? Illness is the escape mechanism, for there is no stigma attached to ill-health that is physical; but we cannot yet discuss psychoneurotic ill-health without being accused of imputing insanity or malingering, while hysteria placed on a certificate might result in the patient losing his job, especially at the hands of an employer who happened to be an intolerant extrovert. But in the privacy of the consulting-room the patient can be shown how his physical symptom is an escape. On the whole patients take the suggestion well, and often face life anew. I know many, and they are now doing well in posts which previously they had evaded on the honest but pathological grounds of physical incapacity.

AND THEIR EFFECT IN INDUSTRY

When vested with authority what havoc these maladjusted persons can play with other people's lives. Imagine one of your anxiety type, in a position of control over a number of subordinates, finding compensation in an aggressive or overbearing manner; and how, if given the power and the requisite detonator, which may be quite a trivial matter, he may hold over several people the fear of dismissal; and since the exercise of power by these people is often highly capricious, how devastating the results may be.

Gastric pain and so-called D.A.H. have a high correlation with the anxiety states and are found not only in such superiors as I have just sketched, but in their victims who when even normally balanced in their emotions may easily become pathological with a few months of such treatment. These people exist in fairly considerable numbers, and in large concerns it is vital that no manager should be given power of dismissal that is not subject to review by an independent authority. Power to-day tends to become concentrated in ever fewer hands, and the larger things get and the more "rationalised" they become, the greater is this tendency. Where power in the hands of an emotionally unbalanced person operates unchecked it gives rise to a high labour turnover, a high sick absence rate with an increase of gastric and cardiac cases.

The obsessional type comprises a high proportion of the very efficient, but to work for an emotionally unbalanced obsessional is to experience the fringe of Dante's inferno, especially if he cannot bear to delegate responsibility and must be kept informed about every detail, which he criticises with meticulous care. Unfortunately he often earns from his superiors a wholly unwarranted reputation for being indispensable.

The economic factors which touch up people's varying temperaments differ greatly. Some are content with everything except perhaps the foreman, others look out upon this complexity of engineering, economic and administrative machinery, and wonder whether they count for very much. They tend to regard themselves as cogs in the mechanism and develop, maybe, into malcontents, maybe into patients. The man who is unemployed may rage openly at the street corner or symbolically in the sick-room at the machinery which he regards as his enemy, while the ambitious lad from school may lose his interest in work or develop into a clinical or criminal problem.

There are countless factors in industry and commerce to-day which give rise to clinical problems calling for much coöperation between medical practitioners and those engaged administratively. The most valuable help about such cases can be obtained by making study of conditions of work in the firms which employ your patients, and the emotional is more important than the physical background. Of course excessive hours, bad ventilation, and undue strain must be corrected, but once these things are put right, it is the psychological environment that needs elucidation.

Prevention Easier than Cure

Psychological disorder is easier to prevent than to cure, and hence our educational system must aim at fitting children for life as it will probably be lived thirty years ahead rather than as it was thirty years ago. No person, in my opinion, should hold any position of authority over human beings in industry or commerce who has not had a sufficiently broad biological outlook inculcated as shall enable him or her to understand the place of instinct and emotion in human life and temperament. This educational reform is, I believe, at the root of constructive social hygiene in the future. In the day continuation school attached to my own firm we have, with the approval of the Board of Education, instituted elementary general biological training as a cultural subject, and I have great hopes of its development and value but it is as yet in its infancy. It has demonstrated that few children from the schools to-day have the vaguest idea of the place of man in the scheme of things, no knowledge of the romance of human development, and little innate urge towards physical and mental integration. It is possible to obtain this even after the age of 14, but it should be begun very early if it is to bear the best fruit. We must not, however, confuse the creation of thousands of half-baked biologists, which would be futile, with the basic need for a general and cultural biological outlook, which is essential.

Economic development is evolving towards a high degree of organisation and interdependence, and medicine is slowly but surely finding its place in this structure. We must not condemn rationalisation and high-grade organisation, for it appears to be a necessity of survival in a mechanical and scientific age, but we must integrate the new developments with our medical policy.

Correlated medical services in school, industry, commerce, and home must be evolved within an economic scheme which has for better or for worse become organised and rationalised on a vast scale. The fact that much work is still done by small-scale methods does not in the least detract from the argument. The troubles attributed to modern industrial and commercial methods are more than likely to be but the troubles of a phase of transition, but if they are to pass we need to have a people more mentally and physically integrated than we have at present, more psychologically adult and more determined to be masters of their own destinies. Medicine has an enormous new rôle to play in education, constructive planning, and in therapy. Much more interest must be taken in coöperation with educationists and with the leaders of industry and commerce in the evolution of training and of methods of employment. While as regards treatment much can be done within industry in such a way as to interfere as little as possible with production and earning capacity.

I hope we shall not let our opportunities slip away in any mistaken belief that modern economic tendencies are of no real or abiding significance to the practice of medicine in its fullest sense.

THE ADRENOGENITAL SYNDROME*

BY L. R. BROSTER, O.B.E., M.Ch. Oxon., F.R.C.S. Eng.

SURGEON TO CHARING CROSS HOSPITAL, LONDON

THE occasional occurrence of secondary male sex characters in the female has long been known, but remarkable advances have been made since 1905 when Bulloch and Sequeira [1] first brought into prominence the relation between the precocious appearance of secondary sex characters and the presence of cortical tumours of the adrenal. My interest in the condition was first stimulated some eight years ago by my colleague, Dr. Gordon Holmes, who asked me to remove the adrenal from an adult with similar symptoms. A few cases had already been reported in which tumours, both simple and malignant, had been surgically removed as a remedy for the syndrome, but its association with cortical hyperplasia had not then been recorded except in the post-mortem room. Dr. Gordon Holmes's case proved on laparotomy to belong to the hyperplastic variety, so we ventured to remove the larger adrenal. It was the forerunner of the present series of cases.

The condition has been described in detail in three previous publications,[2-4] and I propose here to deal with it in a more general way, mainly from the biological point of view.

Clinical Features

The syndrome may be defined as that condition in which secondary male sex characters appear in the female, and it is associated with a retrogression of the primary and secondary feminine characters and their functions. The main changes, which depend upon the time of onset, may be briefly described as follows. (1) The appearance and disappearance in the female of hair according to the male pattern and distribution. (2) Alterations and bodily contour towards the male sphere: broadening of the shoulders relative to the pelvis; overgrowth of muscle and bone, lessening of the subcutaneous fat, and a coarsening in the texture of the skin; enlargement of the clitoris; and deepening of the voice. (3) Immature development of the female genitalia, both internal and external; absence or under-development of breasts; degenerative changes in the ovaries giving rise to amenorrhœa, either primary or secondary, or disturbances of menstruation. (4) Alterations in the psychological outlook towards the male type.

FIG. 1.—Group I. Case 2 of summary.

As the numbers in the series increased, it became possible, in 1932, with the coöperation of Dr. Gardiner-Hill and Dr. Greenfield, to publish a paper [3] in which the cases could be classified into three groups:—

I.—Adrenal pseudohermaphroditism, in which the changes were declared at puberty, and were accompanied by primary amenorrhœa.

II.—Adrenal virilism, in which the changes appeared after a normal puberty, and were followed by disturbances in the menstrual function or secondary amenorrhœa.

III.—Mild virilism in association with other endocrine disturbances occurring after puberty—the fat type.

Since then I have been able to add a fourth group—post-menopausal virilism.

FIG. 2.—Group II. Case 11 of summary.

Group I.—It will be seen from the accompanying illustrations that the earlier the onset the greater the degree of virilism. There is obviously a masculinising factor at work, and if it starts at some time before puberty, when active bodily growth and sexual development takes place, it will change the figure of a woman to that of a muscular man. In the patient shown in Fig. 1 there is much hair of male distribution, the clitoris is enlarged, and the feminine characters have dwindled. The uterus is infantile, the ovaries are cystic, the patient has never menstruated, and she has no breasts.

Group II.—Most of our cases belong to this group in which changes are not so well developed. Here the onset of virilism is after puberty, and averages from 15 to 18 years in the series. Menstruation starts normally, but at the time of onset of the virilism, or soon after, there is an upset of its normal rhythm and duration, and secondary amenorrhœa may supervene. The uterus is small and the ovaries degenerate. There are other signs of endocrine imbalance at this stage; some of these patients become fat, and while the majority lose this fat and remain adrenal in type, others retain it and drift off into multiglandular types. The male build and male distribution of hair are well marked in the illustration of this group. (Fig. 2.)

Group III.—The case illustrating this group (Fig. 3) is anomalous in that the male element, as shown by abnormal hair and enlarged clitoris, is not marked; the infantile uterus, cystic ovaries, and amenorrhœa conform to type; but a third element has crept in, as shown by the abnormal deposition of fat. This increase in weight dated from the onset of virilism and the cessation of the menses at the age of 16. This particular case has been previously published, and Dr. Gardiner-Hill considered that

* A Hunterian lecture delivered before the Royal College of Surgeons of England on Jan. 19th.

the adrenal formed part of a multiglandular syndrome; since then, however, he has inclined to the view that the case is probably one of Cushing's basophil adenoma of the pituitary.[5] The differences in this group from the others will be alluded to under the various headings, but at any rate it gave us a valuable hint of an association between the adrenal and pituitary. Intense headaches of the migrainous type with fits of depression are common in these cases, and the possibility of their being of pituitary origin must be considered.

FIG. 3.—Group III. Not operated upon. Similar to Case 3 of series.

Operative Results

In a series of 15 cases, summarised in the accompanying Table, our experience of the effect of unilateral adrenalectomy on the main symptoms has been very gratifying in Group II., but not in Groups I. and III. There has been a fairly uniform disappearance of the male characters, and a quicker restoration of the feminine functions. It will be seen that the adrenals have been removed from one or other side, so it is natural to infer that they are both involved in the pathological process. The smallest of the glands excised was within the normal limits, yet the clinical result was very satisfactory. Thus we have been able to establish the important fact that virilism is independent of the size or hypertrophy of the adrenal.

In Group II., as already stated, the average age of the onset of virilism is 18 to 20, after a normal puberty, so the syndrome has developed in the comparatively short space of four years, and has not become too fixed. The removal of one adrenal, usually the larger, has been sufficient to swing the balance from the male towards the female sphere. The main features of recovery are the shedding of hair and the return to normal menstruation. The acquired hair can be pulled out in bunches, with little or no pain, within a few days of the operation. In some patients the hair becomes white at the tips, and in others a slight sex colour differentiation has appeared. The subject of hair is a delicate problem with women. With virilism they will adopt any alternative rather than shave, and after adrenalectomy they are equally unwilling to pull this hair out.

The menses show a gratifying return to normal, even after prolonged periods of amenorrhœa, and the injection of œstrin has been of considerable value in the more obstinate cases. In one recent case operation was followed by a complete depilation of male hair within a fortnight, and a period within three days after seven years' amenorrhœa. There is as yet no apparent injury to their general health; their complexions become rosy, their minds are happy, and in some of the cases with the reappearance of feminine functions there has been a return to the finer points of feminine interest.

In Group I. operation after puberty is far too late to have any chance of changing characters which have become fixed. If it were possible to diagnose virilism before this date, then earlier operation should have equally good results. The problems of Group III. will be discussed later.

The operation is a difficult one, and demands a technique and care of its own. I feel it has been justified by the contribution it has made to research. There is at present only one indication for operation—namely, that the case belongs to Group II., and it is to be hoped that operation on other types will be undertaken only with the genuine idea of making additions to knowledge.

Laboratory Investigations

The laboratory investigations undertaken have been: first, chemical and metabolic (in which I have had the help and advice of my colleague, Mr. Jocelyn Patterson, Ph.D., and of Mr. J. Adler); and, secondly, histological.

In the chemical and metabolic investigations we have travelled hopefully on a long road but have failed to arrive at any very definite results. We have examined the blood calcium, phosphorus, cholesterol, and urea, the gastric juice, the blood-sugar, the sugar-tolerance curves, and the effect of insulin on the fasting patient. This last experiment was designed to see what resistance the patients had to insulin, and the blood was examined at half-hourly intervals. All these tests were within normal limits, except for slight differences in the cholesterol and sugar metabolism. The blood cholesterol was definitely raised in Group III. cases. The sugar-tolerance curves in most of the cases showed some distortion from the strictly normal response, in that there was a normal elevation from the fasting stage, but a slower return to normal. The majority of curves came out on the high side, making the average above normal, and the highest were of the Group III. type. The insulin test was generally unsatisfactory from the point of view of drawing any conclusions, but as a whole there was a tendency to show a resistance to insulin. The immediate result of operation on the sugar-tolerance curves was negligible, and in one remote result, also Group III., there was a further decrease in the sugar tolerance. (Fig. 4.) In the few cases of the Group III. type, there was a definite increase in the red cell count. From these results it will be seen that the main differences from normal standards

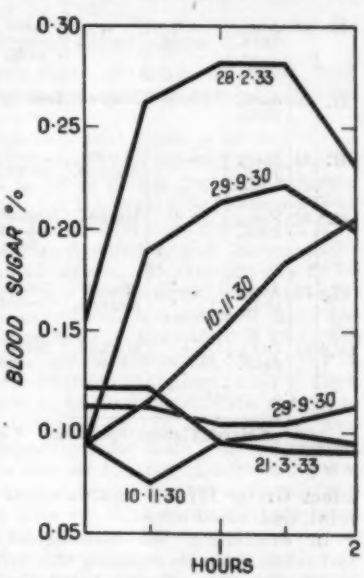


FIG. 4.—Sugar-tolerance curves from a case of Cushing's syndrome submitted to unilateral adrenalectomy. The three upper curves represent the sugar-tolerance curve taken before, immediately after, and some time after operation. The lower curves represent the sugar-tolerance curve after the administration of 10 units of insulin.

SUMMARY OF CASES

Group.	Age.	Date of operation.	Degree of virility.	Hair.	Periods.	(a) Voice. (b) Breasts.	Outlook.	Genitalia.	Clitoris.	Fuchsin reaction.	Result.
I.	15	Sept., 1927.	+ + +	Marked.	Prim. amen.	(a) Low. (b) Underdeveloped.	Normal.	Ut. inf.	+ + +	Left strong.	Very slight change. Abroad.
I.	22	Sept., 1928.	+ + + +	,,	,,	(a) Rough. (b) None.	Indifferent.	Ut. inf. C.O.	+ + + +	,,	Very slight change.
III.	18	Oct., 1930.	+	Slight.	Amen. 18 mths.	(a) and (b) Normal.	Childish.	,,	+	Right strong.	Loss of hair. No change.
II.*	21	June, 1929.	+ +	Moderate	Amen. 10 mths.	(a) Deep. (b) Small.	Normal.	Ut. small.	Normal.	Left strong.	Good result. Loss of hair. Periods regular. Married. Son since op. Very good.
II.	22	Oct., 1930.	+ + +	Marked.	Irregular.	(a) Rough. (b) Smaller.	,,	Ut. small. C.O.	+	,,	Menses regular. Hair less, coming out. Headaches less severe. Friends remarked on improvement. More feminine. Very good.
II.	20	July, 1931.	+ +	Moderate	Amen. 1 year.	(a) Normal. (b) Small.	,,	,,	+	,,	Good. Periods fairly regular. Hair not coming out so easily as at first. More interested in life.
II.	21	Mar., 1932.	+ +	,,	Regular.	(a) and (b) Normal.	,,	Ut. inf. C.O. (left).	Normal.	Right strong.	Hair less. Comes out easily. Periods regular; happier. Good.
II.	29	June, 1932.	+	Very marked.	Amen. 9 mths.	(a) Normal. (b) Smaller.	Homosexual.	Ut. inf. C.O.	+	Left mod.	Not much change. Bedridden before and after operation; four periods since.
II.	20	July, 1932.	+ +	Moderate	Irreg. amen. at times.	(a) Harsh. (b) Normal.	Normal.	,,	+	Right mod.	Hair comes out easily. Periods regular. Outlook improved and changed to normal. Very good.
II.	18	Aug., 1932.	+ +	,,	Late onset irreg.	(a) Normal. (b) Grew with menses.	Indifferent.	,,	Normal.	Right strong.	Hair comes out easily. Periods now regular. More feminine in outlook.
II.	30	April, 1933.	+ + +	Marked.	Regular.	(a) Deep. (b) Smallish	Normal.	Ut. small. Fibrous O.	+	Left fairly marked.	Good. Hairs white at ends, pull out easily. Periods regular. Complexion imp.
II.	35	May, 1933.	+ +	Fairly marked.	Amen. at 26.	(a) Deep. (b) Smaller.	Male tendencies.	Ut. small. Big C.O.	+	Left strong.	Amenorrhœa continues. Brighter outlook. Much the same. Fair.
II.†	32	Nov., 1933.	+ +	Marked.	Regular, ceased 26.	(b) Small.	Normal.	Small fibroid in ut., small C.O.	+ +	Left fairly marked.	Period started two days after operation. Hair all out in two weeks. Very good.
II.	26	Aug., 1933.	+ +	Fairly marked.	Irreg. Ceased 20.	(b) Smallish.	Homosexual.	Ut. inf. C.O.	..	Left mod.	Hair coming out. Periods regular. Outlook brighter and more normal. Very good.
IV.†	54	Oct., 1933.	+	Marked. Bald.	Hyst. R. ovariot. 38.	(a) Roughish. (b) Normal.	Disgusted with herself. Sensitive.	Remaining left ovary cystic.	+ +	,,	Hair all out in two weeks. Slight growth on head. Very good.

* Married since operation. † Married. Prim. amen.—Primary amenorrhœa. Ut. inf.—Uterus infantile. C.O.—Cystic ovaries.

affect Group III. as regards sugar tolerance, cholesterol, and blood count.

In examining the histological material, I was fortunate again in enlisting the help of my colleague at Charing Cross Hospital, Dr. H. W. C. Vines. We argued that if there was no cause to be found in the arrangement or shape of the cortical cells, there might possibly be a difference in function, and by using the Ponceau fuchsin stain he was soon able to show that in all my cases of unilateral adrenalectomy the cytoplasm of the cells of the cortex contained a vivid red granular material, mainly in the inner and middle zones. This colour varied in intensity, and was most vivid in the adrenal already shown, which in size was within normal limits, suggesting that the response was as much qualitative as it was quantitative in the cases of hyperplasia.

To exclude the possibility of post-mortem changes taking place in the adrenal, a further control series was started by removing portions of normal adrenal in the course of performing kidney operations. These were all negative to the stain, as were all normal post-mortem adrenals. We were able to collect from colleagues several autopsy specimens of tumour associated with virilism, and these were positive, showing that the fuchsinophil material in the cells is capable of surviving post-mortem conditions. Interesting as this discovery was, it seemed unlikely that we had hit upon some isolated reaction in the adult, so a further search was made into the fœtus. Dr. Vines obtained a strong fuchsinophil reaction in the male fœtus between the ninth and seventeenth week; while in the female fœtus the reaction was not so strong, and of shorter duration, lasting from the eleventh to the fourteenth week. After the twentieth week it was absent in both sexes. This observation may well prove to be one of fundamental importance in the elucidation of many difficulties. It establishes a very early and passing phase in the embryo, common to both sexes but less marked and of shorter duration in the female.

In the other tissues of the body traces of this

reaction were found in the interstitial cells of the testis, the corpus luteum, and the anterior lobe of the pituitary.

Anatomy and Embryology of the Adrenal Gland

In order to give a clear idea of the background of our work, it is necessary to refer briefly to the comparative anatomy of the adrenal, and to trace the steps which have led to the formation of this highly specialised organ.

In its primitive form the cortex is separate and intimately connected with the reproductive system. It then becomes associated with the cells of quite a different system—the sympathetic—which ultimately forms the medulla. It appears first in fishes, and then increases in importance, so that it becomes essential to life in the higher animals. In sharks and rays the two cell-systems are separate; the cortex is known as the interrenal body and is associated with a marked development of the sexual system. In amphibians (frogs) the two cell-systems make a definite advance towards each other, and are arranged in a chain along the dorsal segments, until we find them intimately mixed in reptiles and birds to form a solid organ. In mammals and man the medulla becomes completely enclosed with the cortex, and the method by which these sympathetic cells wander into the cortex in man has not been observed even in the higher apes. From the nature of such a migratory process it is not uncommon for cells to become detached, and to form accessory adrenals, which may contain the elements of one or the other, or of both these cell-systems.

In man the adrenals are situated over the upper poles of the kidneys, and at birth reach the maximum size of their development, when each is about one-third the size of the kidney. The cortex then undergoes an astonishing and rapid process of absorption and regeneration until the size of the gland is reduced to one-thirtieth of that of the kidney. The glands enlarge at puberty, during pregnancy and the menses. Between the fourth and fifth decade they reach their zenith and then gradually undergo a senile involution. It occasionally happens that this adult stage of the gland is present at birth, in which case the fœtus is born a brainless monster, so that it has been thought that the cortex is in some way connected with the development of tissues rich in lecithin.

In point of time the cells of the adrenal cortex can be recognised about the fourth week, and are derived from the same mass of cells—the genital ridge—which also give rise to either the testis or ovary. There is thus a common origin for the cortex and sex gland. The determination of sex takes place about the seventh week, and, as we have noted, the appearance of the fuchsinophil reaction commences some two to four weeks later.

Our clinical evidence and operative results have established a very marked connexion between this reaction and a condition of maleness in the female, and this naturally suggested the possibility that "the substance so staining must be closely related to or even identical with the male hormone or its precursor," [6] while its presence in the intercellular spaces further suggested that it acts via the blood stream.

Crew [7] states that "so far as is known, the sex chromosome mechanism is the sex determining mechanism, but in many cases this mechanism can be overridden and the sex of the individual determined in other ways." It is therefore reasonable to argue that a strong and prolonged male phase in the female fœtus may possibly be one of those factors which so determine sex; to what extent is still a matter of conjecture. Dr. Vines has obtained a positive reaction in true hermaphroditism, and it is probable that sex reversal, from female to male, will come to be included in this category. But we do know that the cells of the adrenal cortex retain the power of developing this substance into adult life, and that it may become activated at certain periods of physiological stress, such as puberty. If we accept this explanation then it readily accounts for Groups I. and II., which we have already considered clinically.

However, Group III. warns us that the problem is not so simple as this. It may be argued that in adult virilism there is a failure on the part of some feminising influence to counteract the male phase. The brief duration of this male phase in the female fœtus suggests that it is suppressed, and this suppression is due to some mechanism dependent on the functional activity of the other endocrine organs. That there is some such mechanism was found by Dr. Vines in two female fœtuses, in which a prolonged male phase was accompanied by a definite hyperplasia of the pituitary. Hence virilism may be due to a failure to maintain the normal balance between the anterior lobe of the pituitary and the male adrenal. This type would be associated with a pituitary dysfunction, the clinical picture being determined by the predominance of one or the other factor, and when the pituitary dysfunction is in the ascendent there is a shift towards the type of basophil adenoma of the pituitary described by Cushing.

Clinical Conclusions

From an examination of some 60 cases with virilism of varying degree, a few general conclusions may be drawn.

That heredity plays a part there is no doubt. A family history of hirsutism was present in a quarter of the cases, and in these it was twice as common on the distaff side. On the male side it ranged from grandfather, father, to brothers; on the female, from mother, sisters, aunts, daughters, and nieces—more frequent in aunts and sisters. It thus appears to be transmitted more on the female side. There is slight evidence that the condition is associated with the events which occur at birth. It occurred in two cases of twin births, one case of premature birth, and in one case in a four-year-old daughter within three months of its onset in her mother. With regard to other endocrine disturbances, it appeared in two patients whose mothers suffered from Graves's disease, in one from whose mother I removed a parenchymatous goitre, and in one whose mother suffered from diabetes. In one case of mild virilism there were symptoms of hyperthyroidism. One point of practical importance must be stressed, and that is women with virilism are comparatively infertile, as one would expect from the nature of the pathology. If they conceive they are apt to miscarry. On the other side, one of my early patients who had amenorrhœa before adrenalectomy, has since married and produced a son.

The syndrome does not appear to be recognised by gynæcologists. In this series one patient had been curretted, and two patients had had hysterectomy, one of them with unilateral ovariectomy. From the nature of the pathology described such interference is only likely to aggravate the condition of virilism.

General Discussion

So far we have discussed the problem only in its more extreme form. The study of the whole series of cases suggests that the adrenogenital syndrome is

not a disease but is a definite deviation from the normal evolutionary process. In this respect we have to think in terms of a normal and transient phase in fœtal physiology, which by its persistence gives rise to the abnormal in the adult. I believe it forms a very definite streak in the human species and some of its minor stigmata are fairly common. Nor is it confined to our species alone. We have observed a similar syndrome with a similar pathology in the adult hen. These sex changes are more common in some of the lower animals, who should afford ideal material for research.

If our suggestion of the male hormone proves correct further considerations become apparent. It corroborates the theory of bisexualism, at any rate so far as the female is concerned—a theory whose truth has frequently been assumed but remains unproved. The altered sex outlook which has been observed in these patients, and which reverts to the normal after operation, raises the question of an endocrine basis for certain types of mental abnormality, and this will have to be taken into consideration in adjudicating on medico-legal affairs. The question of heredity has already been referred to, but it is to the eugenist that the problem offers a wide field of research. The presence of the adrenogenital syndrome in man is a retrograde movement, since it tends towards the intersex type. Is it stationary, receding, or increasing? If the latter, then we may be the innocent spectators of an evolutionary process drifting slowly and inevitably into the neuter state. The conditions of life are rapidly changing. The emancipation of women has been a big change; there is over-population in many parts of the world; there are many factors in our social lives leading to race deterioration, and they must react on the individual. Too many minds, content with their lot and unaware of these abnormalities in others, decry this so-called tampering with nature. Theirs is a selfish attitude; but in clinical science there is a spirit of altruism which aims at projecting our acquisitions to the betterment of the human race.

REFERENCES

1. Bulloch, W., and Sequeira, J. H.: Trans. Path. Soc. Lond., 1905, lxvi., 189.
2. Broster, L. R.: Brit. Med. Jour., 1931, i., 743.
3. Broster, Gardiner-Hill, H., and Greenfield, J. G.: Brit. Jour. Surg., 1932, xix., 557, No. 76.
4. Broster, and Vines, H. W. C.: The Adrenal Cortex: A. Surgical and Pathological Study, London, 1933.
5. Cushing, H.: Bull. Johns Hopkins Hosp., 1932, l., 137.
6. Brit. Med. Jour., Leading Article, 1933, ii., 880.
7. Crew, F. A. E.: Sex Determination, London, 1933.

HOSPITALS FOR WOMEN AND CHILDREN.—Last year the South London Hospital for Women and Children, of 140 beds, 25 of them in private rooms, admitted 2518 women and children, while out-patients made more than 69,000 attendances. The cost of maintenance during the current year is estimated at £25,000, and a further £2000 is needed for laying new floors in the wards.—In 1933 the Princess Elizabeth Hospital for Children at Shadwell had 1797 in-patients and 14,689 out-patients, the latter a large increase. The Bailey Convalescent Home at Bognor received 324 patients, and the result of the year's working was a reduction of the bank loan by £2000. Proposals are in hand for the extension of this hospital, which has become seriously inadequate, at a cost of £37,000, of which only £10,000 is at present available.—Owing to the closing of the institution for two months while the out-patient's department was being enlarged, and other improvements made, Paddington Green Children's Hospital last year received only 713 in-patients as against 845 in 1932. Their average stay was 15·13 days and their average weekly cost £3 19*s.* 1*d.* Patients paid £626 towards the total expenditure of £11,766.

THE LYSIS OF FIBRIN BY STREPTOCOCCI:

ITS APPLICATION TO THE PROBLEMS OF RHEUMATIC INFECTION IN CHILDREN

BY GEOFFREY HADFIELD, M.D., F.R.C.P. Lond.
PROFESSOR OF PATHOLOGY IN THE UNIVERSITY OF BRISTOL

VINCENT MAGEE, M.B., B.Sc. Belf., D.P.H.
DEMONSTRATOR OF PATHOLOGY IN THE UNIVERSITY; AND

C. BRUCE PERRY, M.D. Brist., M.R.C.P. Lond.
PHYSICIAN TO THE WINFORD ORTHOPÆDIC HOSPITAL; ASSISTANT PHYSICIAN TO THE GENERAL HOSPITAL, BRISTOL; COLSTON RESEARCH FELLOW IN THE UNIVERSITY CENTRE OF CARDIAC RESEARCH, BRISTOL

IN 1933 Tillett and Garner, of the Johns Hopkins University, showed that the filtrates of young broth cultures of hæmolytic streptococci of human origin are capable after a remarkably short period of incubation of completely liquefying human fibrin, and in this respect appear to be unique amongst pathogenic bacteria of clinical importance. Animal fibrin proved totally resistant to liquefaction unless produced by the action of human thrombin on animal fibrinogen, and of 18 strains of hæmolytic streptococci of animal origin only 3 were fibrinolytic to human fibrin.

These results may explain the power of hæmolytic streptococci to invade human, as opposed to animal, tissues and throw some light on the anomalous results which have followed attempts to reproduce human streptococcal disease in such animals as the rabbit whose fibrin is totally resistant to streptococcal fibrinolysis. They certainly open up a new line of investigation into the problem of streptococcal immunity.

In their first paper Tillett and Garner showed that when recent and fairly remote streptococcal infection could be excluded, all specimens of human fibrin were susceptible to fibrinolysis, whereas the fibrin from cases recently recovered from such infection often proved totally resistant. They considered this phenomenon of "resistance" might ultimately prove to be a specific response to streptococcal infection due to the development of specific antifibrinolysins analogous to the specific antihæmolysins which are known to be produced against streptococcal hæmolysin (Todd, 1932).

They have recently published another paper with Thomas (1934) in which this opinion is considerably strengthened. Total resistance was found regularly to follow hæmolytic streptococcal infections such as erysipelas, scarlet fever, and streptococcal tonsillitis, but usually not until convalescence was established. It was not found associated with infection by any other micro-organism. In erysipelas "resistance" developed shortly after the temperature fell and persisted for several months. In scarlet fever it was delayed for three to four weeks and persisted for a few weeks only. Purulent streptococcal complications hastened the onset of resistance.

Total resistance to streptococcal fibrinolysis is certainly a remarkable phenomenon; it is always associated with recovery, and, whilst it may be premature to regard it as a specific immunity response, the evidence points in no uncertain way in that direction.

Bacteriological Investigations

We have tested the susceptibility to fibrinolysis of 130 samples of human plasma and the fibrinolytic

power of 30 strains of streptococci showing β-hæmolysis on blood plates, and have confirmed the main conclusion arrived at by Tillett and Garner (1933), and Tillett, Thomas, and Garner (1934).

We have used the original technique of Tillett and Garner with slight modifications. Blood was obtained by vein puncture and collected over potassium oxalate (0·02 g. to 10 c.cm. of blood) in centrifuge tubes and tested within 24 hours of collection. The streptococci were grown in buffered meat-infusion broth for 18 hours and the reaction, which was usually in the region of pH 6·0, was brought to pH 7·2 by means of a phosphate buffer solution. To 0·2 c.cm. of plasma diluted with 0·8 c.cm. normal saline was added 0·5 c.cm. of broth culture and 0·25 c.cm. of a 0·25 per cent. solution of calcium chloride solution in saline and the mixture incubated in a water bath at 37° C.

In from 8 to 12 minutes a firm solid coagulum forms and the tube can be inverted without the loss of more than a drop or two of fluid. Incubation is continued, if necessary, for 24 hours. With many normal plasmas complete lysis of the clot takes place in 12 to 25 minutes, and the large majority are completely liquefied under an hour provided a powerfully lytic strain of coccus is used (Fig. 1). Exceptionally complete liquefaction is delayed for four hours. On complete lysis the fluid becomes turbid, the turbidity depending on its original fibrin content, and has a finely granular appearance; all trace of clot disappears. If partially resistant, lysis is delayed for varying periods up to 24 hours, by which time it may be complete or there may still be light or heavy flakes of fibrin floating in an opaque fluid; formed clot is absent. When totally resistant, the clot may have shrunk slightly at the end of 24 hours, there is little change in its appearance or consistency, and the little fluid in which it is suspended remains water-clear.

FIG. 1.—Streptococcal fibrinolysis. 1. Clotted plasma. 2–7 stages in liquefaction of clot, which took 25 minutes.

In all our tests we have used at least three strains of lytic streptococci and at least one, usually several, susceptible plasmas as controls. This is a necessary precaution.

Occasionally an unexplained "lag" occurs in liquefaction even of normal plasma clots. This appears to be due to some change in the culture consequent upon repeated subcultivation, as it is rarely found with freshly isolated and strongly lytic strains. It sometimes corresponds, in a culture originally containing "matt" colonies and their "glossy" variants, to degradation into a "pure glossy" growth, but this can neither be the whole nor the usual explanation as the delay, which may amount to 1½ or 2 hours, may occur when this change is absent. We have found, however, that incubation of the digest at 52° C., after the formation of a firm clot has taken place at 37°, will often hasten lysis.

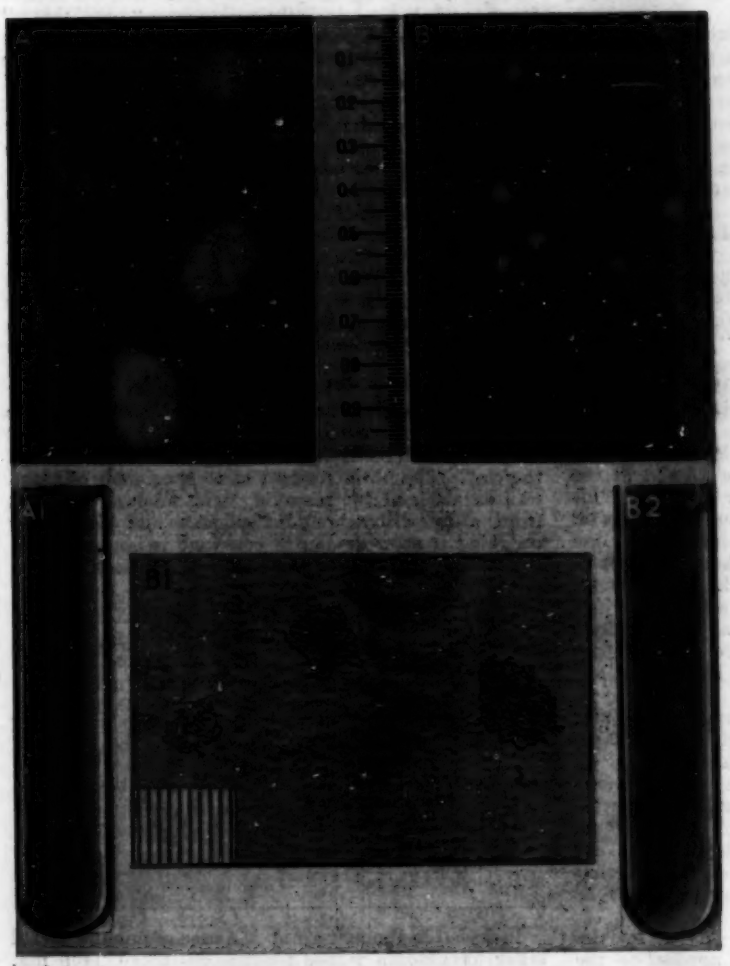


FIG. 2.—A. "Glossy" colonies magnified 64 diameters; (24 hours' growth). A1. Broth culture of A which had little or no fibrinolytic action. B. "Matt" colonies magnified 64 diameters; (20 hours' growth). Scale is 1 mm., graduated in tenths and hundredths, magnified to the same degree as A and B. B2. Broth colonies of B which were powerfully fibrinolytic. B1. Young "matt" colonies of a powerfully fibrinolytic strain magnified about 285 diameters; (6 hours' growth). Each division of the scale represents a two-hundredth of a millimetre.

VARIATION IN FIBRINOLYTIC POWER

We have found that hæmolytic streptococci vary very considerably in their power to liquefy a normal plasma clot. They fall fairly accurately into three groups: the first in which fibrinolysis is rapid and complete; the second in which it is slower but eventually, in approximately double the time taken by cultures in the first group, the clot is completely digested; and a third in which lysis is slow and still incomplete at the end of 24 hours.

Our strains were distributed amongst these groups as follows :—

Group I.—(5 strains)

	Strains
Scarlet fever with purpura	2
Scarlet fever	1
Fatal puerperal septicæmia	2

Group II.—(6 strains)

Fatal puerperal septicæmia	1
Fatal general peritonitis	1
Impetigo	1
Streptococcal tonsillitis	3

Group III.—(10 strains)

Scarlet fever	8
Streptococcal tonsillitis	5
Subacute rheumatism (children)	4
Tooth socket	1
Udder of streptococcal mastitis (cow)	1

All strains were tested for acid production and their capacity to hydrolyse sodium hippurate. By this method one apparently bovine strain was found in Group III. in addition to the strain known to be of bovine origin. All other strains were regarded as being of human origin.

This grouping suggests that fibrinolysis is an attribute of those streptococci which produce severe human infection. None of the strains in Group III. were from cases suffering from a general or a severe infection. The majority of those in Groups I. and II. were from such cases. Our numbers are obviously too small to justify a definite opinion on this point, but they were suggestive enough to encourage further inquiry in this direction.

Except with one strain from a case of fatal puerperal septicæmia of a few days' duration we found that all cocci in Groups I. and II. produced a granular deposit in broth without general turbidity and their colonies were "rough" or "matt." Of the 11 strains in these two groups 4 produced "bread-crumb" colonies which were small, had a very irregular edge and a "matt" surface (Fig. 2). When examined at a magnification of about 400 diameters before becoming visible to the naked eye these colonies were seen to consist of a few extremely long chains very loosely coiled together and throwing out loops at the edge, which thus appeared irregular (Fig 2). This "matt" appearance was present but not so well developed in all the remaining strains except one in these two groups. The exception had the colonial characters of the cocci in Group III. These were, without exception, of the glossy or smooth variety with a "porcelain" surface and a sharp edge; their microscopic colonies were composed of tightly packed short chains; there was no looping at the edges.

Although it is doubtful if "roughness" and "smoothness" amongst streptococci is the same phenomenon as the similar variation found among other bacterial races, "roughness" in streptococci is usually regarded as being closely associated with virulence. That, with one exception, all our most powerfully fibrinolytic strains were rough strengthens the impression gained by studying their source that fibrinolysis and virulence to man may prove to be closely related.

Further support for this view is given by the results of virulence tests which were applied to the majority of the cocci of each group. Quantities varying from 0·5 to 0·0001 c.cm. of young broth cultures were injected intraperitoneally into mice, uniform distribution of cocci being obtained by centrifugalisation and suspending the deposited cocci in distilled water. Four strains tested for virulence in Group I. gave an average minimum lethal dose of 1/2000 c.cm., the average lethal dose of 3 strains in Group II. was 1/50 c.cm., while of 5 strains from Group III., 0·5 c.cm. of four of these failed to kill mice in four days and one was fatal in this dose only in five days.

A complete investigation of the carbohydrate reactions of all strains revealed no reaction or group of reactions which could be correlated with the grouping described above based on fibrinolytic power except that, as a general rule, the final acidity after four days' incubation in 1 per cent. glucose was greater in the feebly fibrinolytic Group III. than in the other groups. (Average for Groups I. and II., pH 6·1, for Group III., pH 5·0.)

After our primary growths had been subcultured about ten times, it was noticed that several of the strains in Group II. were losing their fibrinolytic power and their broth cultures were becoming turbid. We therefore retested the majority of our strains against normal plasma clots after about 30 subcultures had been made. Two strains originally in Group I., both originally isolated from cases of scarlet fever, and both originally producing "pure matt" growths on nasgar were found to be growing in "pure glossy" form and had lost almost all their fibrinolytic power. Three strains, originally in Group II., all isolated from cases of streptococcal sore-throats, had undergone a similar degradation. Of our 11 actively fibrinolytic strains, therefore, fibrinolysis appeared to be a relatively permanent characteristic in 6.

No exact correlation could be established between hæmolysin production and fibrinolysin production. It was a general rule that strongly fibrinolytic strains were also strongly hæmolytic as judged by their effect in the usual dilutions after one hour's incubation with a constant dose of sheep's red cells; 4 weakly fibrinolytic strains however were found to produce relatively large amounts of hæmolysin.

RELATION OF FIBRINOLYSIS TO FIBRIN CONTENT

If fibrinolysis is not a specific attribute of hæmolytic streptococci, susceptibility to lysis should be related to a low, and resistance to a high, fibrin content of the clot. The fibrin content of 60 specimens of blood was determined by removing and washing the clot from a known volume of plasma and accurately weighing it after drying to constant weight.

The figures obtained are shown in Table I. :—

TABLE I

Fibrin content. (Mg. per 100 c.cm.)	Cases in which plasma clot was—		
	Completely dissolved.	Partly dissolved.	Totally resistant.
Between 300 and 400	8	1	..
„ 400 „ 500	24	2	..
„ 500 „ 600	9	0	..
„ 600 „ 700	3	3	2
„ 700 „ 800	2	1	..
„ 800 „ 900	1	..	1
„ 900 „ 1000	1	..	..
„ 1000 „ 1100	0	..	..
„ 1100 „ 1200	1	..	..
„ 1200 „ 1300	0	..	..
„ 1300 „ 1400	1	..	..

Included in the first group is a case of pneumococcal lobar pneumonia whose plasma contained 1400 mg. of fibrin per 100 c.cm. This exceptionally heavy clot was completely digested in 25 minutes by a streptococcal culture. Another case in which the fibrin content was 830 mg. per cent. and the plasma clot completely lysed, was proved to be suffering from acute

streptococcal septicæmia following lateral sinus thrombosis, and the coccus identified as belonging to the viridans group. In contrast with these cases the plasma clots from two cases of hæmolytic streptococcal infection proved totally resistant to the lytic action of powerfully lytic strains, although their fibrin content was between 600 and 700.

We feel justified in concluding, therefore, that susceptibility and resistance to fibrinolysis is in no way related to the fibrin content of the plasma, a conclusion which lends strong support to the view that digestion of the plasma clot is a specific effect, and resistance to fibrinolysis a specific immunity response.

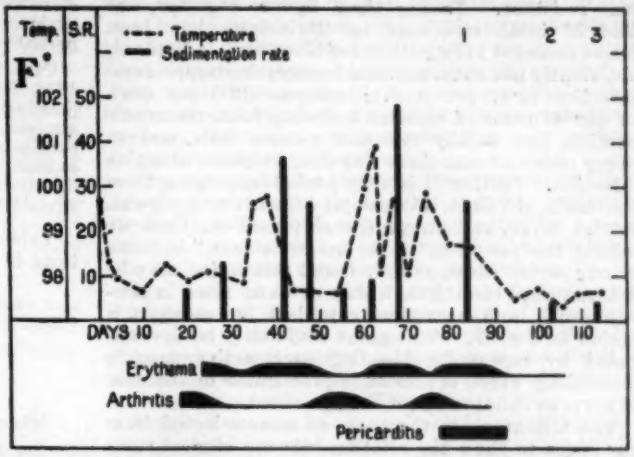


FIG. 4 (Case 2).—Changes in temperature and sedimentation-rates in relation to erythema, arthritis, and pericarditis. At 1 the plasma clot was totally resistant to fibrinolysis; at 2 and 3 it was completely dissolved.

Resistance to Fibrinolysis in Rheumatic Infection

As a certain amount of evidence has recently accumulated which suggests that hæmolytic streptococci play an important rôle in the production of rheumatic infection in children, we investigated the plasma of 44 children suffering from rheumatic heart disease for resistance to fibrinolysis.

The cases were divided into two groups, those in which there had been a recent acute or subacute attack of infection or relapse of infection and in whom some clinical evidence of activity persisted at the time of examination, and those presenting no clinical evidence of active disease.

The clinical signs by which activity was recognised were: (*a*) fever; (*b*) joint pains with or without arthritic effusion; (*c*) elevation of the sleeping pulse-rate, as advocated by Schlesinger (1932); (*d*) appearance of new or an increase in previously recognised physical signs, such as pericardial friction; (*e*) loss of weight; (*f*) subcutaneous nodules. In some cases relapse was preceded by sore-throat.

It is generally agreed that the sedimentation-rate of the red blood-cells is an accurate clinical index of activity of infection in rheumatic children (Payne 1932, Bach and Gray Hill 1932, and Struthers and Bacal 1933), and it has been the experience of one of us (C. B. P.), based on over a thousand estimations of the sedimentation-rate in 163 cases of rheumatic carditis in children in all stages of the disease, that this estimation is probably the most reliable guide we possess to activity of rheumatic infection. It may rise before relapse is clinically manifest; without exception it remains high during its course and well into convalescence.

Our active cases are therefore divided into those in which the sedimentation-rate was over and those in which it was under 20.

Every case of serious active infection fell into the first group and the plasma clot of nearly half these cases was found to be completely resistant to fibrinolysis at some period during convalescence. Active cases with a sedimentation-rate under 20 were always those in whom relapse was relatively mild or who were studied at a late stage of relapse. In one only of these cases was the plasma clot completely resistant; in one-third of these cases there was considerable and abnormal delay in liquefaction. All the quiescent cases showed complete digestion of the clot usually well within the period found for normal bloods. Twenty-six children in the same age-period as the rheumatic children (5 to 15 years) were selected as controls. In none was there any manifestation or history of recent hæmolytic streptococcal infection. In all of them plasma clot was normally susceptible to fibrinolysis, and no instance of total resistance to fibrinolysis was found on examination ot the blood of 28 adults similarly selected as controls. Tillett, Edwards, and Garner tested the plasma clot of 30 "normal" adults and of 14 children and 16 adults suffering from various "non-streptococcal" diseases. Of their 60 controls fibrinolysis took place in four hours or less in 58, in one child it was delayed for 24 hours, but eventually complete, and one case, a child with a history of acute otitis media, which might well have been of hæmolytic streptococcal origin,

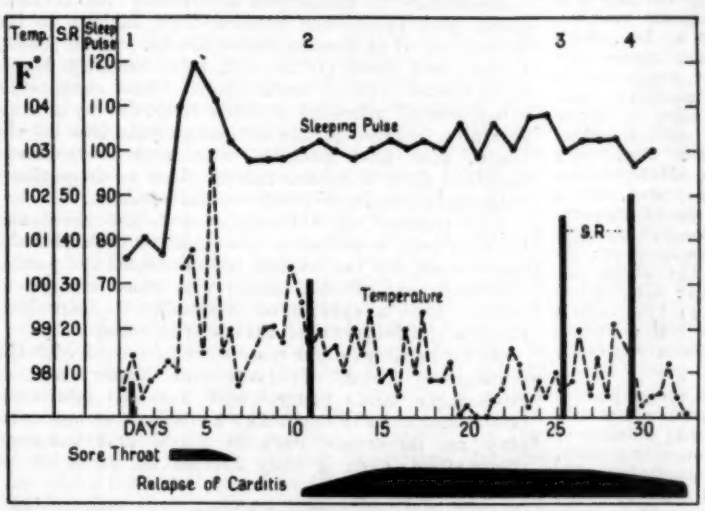


FIG. 3 (Case 1).—Temperature, pulse-rate during sleep, and erythrocyte sedimentation-rate, during a period of sore-throat followed by a relapse of carditis. At 1 the plasma clot was completely dissolved; at 2 and 3 it was completely resistant at 4 it was again completely dissolved.

was resistant. Taking these figures together, one case of total resistance to fibrinolysis has been found amongst 114 specimens of blood from individuals apparently not suffering from hæmolytic streptococcal infection (0·87 per cent.); whereas 12·5 per cent. of our 44 cases of children suffering from rheumatic carditis had totally resistant plasma clots, and in every resistant case there was clear evidence of active infection. Further it is very probable, judging from the results of Tillett, Edwards, and Garner in erysipelas, scarlet fever, and streptococcal tonsillitis, that we missed the period of "absolute resistance" in some of our severe cases, as they found this period may be delayed until the thirtieth day or even later in convalescence, and occasionally to last for as short a period as a week. This point could only be investigated by repeatedly bleeding each active case, a proceeding which is almost impracticable in the case of nervous children under the age of ten.

The following are the notes of cases selected from our series to show the relation between clinical signs and resistance or susceptibility of the plasma clot to fibrinolysis—in active cases with the sedimentation-rate over 20 (Cases 1 and 2); in an active case in which the rate was under 20 (Case 3); and in a quiescent case (Case 4).

CASE 1.—Girl, aged 13 (see Fig. 3). August, 1933: acute relapse of carditis with left-sided pleural effusion and many subcutaneous nodules. October, 1933: relapse with pericarditis. Gradual improvement with gain in weight and fall in sleeping pulse-rate to below alert pulse, and almost complete disappearance of nodules (a few doubtful remnants persisting on knees) by Feb. 19th, 1934, when the sedimentation-rate was 7, and on fibrinolysis test the clot was completely dissolved. Feb. 21st: fever and tonsillitis; streptococci present in throat swab. Feb. 26th: loss of 3 lb. in weight. March 1st: aortic diastolic murmur noted for first time; sedimentation-rate 30; fibrinolysis test, clot completely resistant. March 5th: pericarditis; hæmolytic streptococci present in throat swab. March 15th: pericarditis still present; sedimentation-rate 44; fibrinolysis test, clot completely resistant. March 20th: clinically improved; pericardial rub no longer heard; sedimentation-rate 49; fibrinolysis test, clot completely digested.

CASE 2.—Boy, aged 15 (see Fig. 4). Nov. 11th, 1933: pains in arms and legs and joints with swelling of the joints. Nov. 17th: admitted to hospital; no definitely abnormal cardiac physical signs; fleeting swelling and pain in all joints; marked erythema marginata over the whole body. Dec. 6th: sedimentation-rate 5. Dec. 15th: sedimentation-rate 12. Dec. 24th: much improved; erythema persists. Dec. 29th: rise of temperature; relapse of joint pains; apical systolic murmur; sedimentation-rate 34. Jan. 3rd, 1934: nodules on flexor tendons of hands; pains better. Jan. 4th: sedimentation-rate 23. Jan. 11th: sedimentation-rate 35. Jan. 19th: sedimentation-rate 9. Jan. 23rd: fresh rise of temperature with precordial pain and pericardial rub. Jan. 26th: sedimentation-rate 49. Jan. 31st: fresh rise of temperature with joint pains. Feb. 13th: nodules still present; no cardiac enlargement; no apical systolic murmur; no joint pains or rash; sedimentation-rate 27; fibrinolysis test, clot completely resistant. March 5th: all physical signs disappeared; sedimentation-rate 2; fibrinolysis test, clot completely dissolved. March 16th: steady improvement; sedimentation-rate 2; fibrinolysis test, clot completely dissolved.

CASE 3.—Male, aged 12½ years. Heart found bad at the age of three. Several relapses of rheumatism and carditis since then. August, 1933: acute relapse of carditis and arthritis; considerable cardiac enlargement, mitral stenosis, and aortic incompetence; steady improvement with gain in weight. Jan. 1st, 1934: slight pyrexia; no change in physical signs; sedimentation-rate 5. Jan. 15th: sedimentation-rate 4. Jan. 25th: pyrexia and rash; ? rheumatic erythema marginata; no definite change in cardiac physical signs; some loss of weight. Jan. 29th: sedimentation-rate 32. Feb. 19th: better again; sedimentation-rate 13; fibrinolysis test, clot partially resistant.

CASE 4.—Aged 8. Rheumatism and carditis, October, 1932, followed by relapse of rheumatism a year later. Steady improvement with gain in weight and decrease in abnormal cardiac physical signs. Feb. 19th, 1934: no cardiac enlargement and only soft apical systolic murmur; sedimentation-rate 9; fibrinolysis test, clot completely dissolved. March 5th: very well; sedimentation-rate 7; fibrinolysis test, clot completely dissolved.

Table II. summarises the results of fibrinolysis tests in rheumatic children:—

TABLE II

Fibrin clot.	Rheumatic heart disease.			Controls.
	Recent attack or relapse.		Quiescent.	—
	Sedimentation-rate—			
	Over 20.	Under 20.		
Resistant ..	4 (44·4 %)	1 (8·3 %)	0	0
Partially resistant..	1 (11·1 %)	4 (33·3 %)	0	0
Susceptible .	4 (44·4 %)	7 (58·3 %)	23 (100 %)	26 (100 %)
Total ..	9	12	23	26

Discussion

All the available methods of measuring streptococcal immunity indicate that it is short in duration and relatively slight in degree. The estimation of anti-fibrinolysin and anti-hæmolysin production shows the same irregular results as the estimation of anti-bacterial, antitoxic, and allergic antibodies. It appears likely, however, that the determination of the resistance to fibrinolysis, provided a powerfully lytic strain of coccus is used, can be carried out with less elaborate precautions than agglutination and precipitin tests, and, as resistance appears to follow the majority of hæmolytic streptococcal infections, its determination may prove more generally useful than an attempt to determine the degree of antitoxic immunity by skin tests, as many strains produce little or no toxin.

Resistance to fibrinolysis apparently due to anti-fibrinolysin production bears a close analogy to the production of antihæmolytic antibody. Todd (1932), Coburn and Pauli (1932), and, more recently, Myers and Keefer (1934) have shown that hæmolytic streptococcal infection is often followed by a considerable increase in the anti-hæmolysin titre of the blood, and that patients with active rheumatic infection show a similar rise as often as do patients with frank hæmolytic streptococcal infection.

The number of fibrinolysis tests on rheumatic children here recorded is too small to draw definite conclusions, but the relation between total and partial resistance and clinical activity is close enough to suggest that a short-lived immunity to hæmolytic streptococci follows each attack of infection.

As far as they go our results are in accord with the findings of Todd, of Myers and Keefer, and of Schlesinger and Signy, and furnish additional immunological evidence that hæmolytic streptococci play an important part in acute and subacute rheumatism, even if they furnish no proof of its streptococcal origin.

Conclusions

(1) Broth cultures of 11 out of 30 strains of hæmolytic streptococci were found to liquefy human

fibrin rapidly. (2) The majority of these lytic strains were isolated from cases of severe human infection, and with one exception their colonies on solid media were "rough" and they were virulent to mice. (3) Weakly fibrinolytic strains had glossy colonies and were much less virulent. (4) The liquefaction of human plasma clot by hæmolytic streptococci is not related to its fibrin content. (5) Total resistance to fibrinolysis appears to be a specific immunity response to infection by hæmolytic streptococci. (6) The plasma clot of children suffering from acute and subacute rheumatism was frequently found to show total resistance to fibrinolysis.

In the case of one of us (C. B. P.) this work was carried out during the tenure of a medical research fellowship granted by the Colston Research Society. We are grateful for this assistance.

REFERENCES

Bach, F., and Hill, N. G.: THE LANCET, 1932, i., 75.
Coburn, A. F., and Pauli, R. H.: Jour. Exp. Med., 1932, lvi., 651.
Keefer, C. S., Myers, W. K., and Oppel, T. W.: Jour. Clin. Invest., 1933, xii., 267.
Myers and Keefer: Ibid., 1934, xiii., 155.
Payne, W. W.: THE LANCET, 1932, i., 74.
Schlesinger, B.: Quart. Jour. Med., 1932, n.s. i., 67.
Schlesinger, and Signy, A.: Ibid., 1933, ii., 255.
Struthers, R. R., and Bacal, H. L.: Canad. Med. Assoc. Jour., 1933, xxix., 470.
Tillett, W. S., and Garner, R. L.: Jour. Exp. Med., 1933, lviii., 485.
Tillett, Edwards, L. B., and Garner: Jour. Clin. Invest., 1934, xiii., 47.
Todd, E. W.: Jour. Exp. Med., 1932, lv., 267; Brit. Jour. Exp. Path., 1932, xiii., 248.

THE TREATMENT OF PROFUSE BLEEDING FROM THE STOMACH AND DUODENUM

BY R. S. AITKEN, M.B. N.Z., D.Phil. Oxon., M.R.C.P. Lond.

FIRST ASSISTANT IN THE MEDICAL UNIT, THE LONDON HOSPITAL

THERE is no general agreement about the principles on which cases of profuse bleeding from the stomach and duodenum may best be treated. This is unfortunate, because severe cases, where the bleeding is grave enough to threaten life, often come under the care of hospital residents and practitioners whose individual experience of the emergency is not great. The main choice lies among three courses of action: purely medical treatment, medical treatment plus blood transfusion, and surgical treatment. The conservative teaching recommends medical treatment only, and in the absence of an extended experience of other methods the wise course is clearly to follow that teaching. It is usually coupled with the comforting assurance that very few cases so treated die. It is doubtful, however, whether the fatal cases are in fact few enough to offer much comfort, when it is remembered how common profuse bleeding is. Published figures vary from Hurst's 2½ per cent. mortality among cases admitted to Guy's Hospital on account of hæmatemesis or melæna and not previously operated on, to Chiesman's 25 per cent. mortality among cases admitted to St. Thomas's Hospital for gross hæmatemesis and melæna. Statistics on this subject are particularly difficult to appraise, because no exact limit can be set to the degree and recency of bleeding that justifies admission of a case to a series, and because statistics take scant account of the very variable circumstances and features of different cases. Nevertheless, it does seem clear that approximately 10 per cent., at least of the moderately severe cases, die. This is no negligible minority. Hæmatemesis and melæna are so common that fatalities represent a considerable number of lives, and it is no credit to modern medicine that these are still lost from a cause so clearly understood and—in theory—so easily remedied as hæmorrhage from the stomach or duodenum.

The best use of the three methods mentioned above (medical treatment, transfusion, surgical treatment) is clearly to be found only by experience, for none is infallible, and each has its dangers. Bare statistics are an unreliable substitute for experience. On the other hand few observers, if any, have had adequate experience of all three methods, and if they have none has published an appraisal of them that has won widespread assent. The problem can best be studied, then, by collating the experience of a number of observers using these methods. This I have attempted to do, using the records of the London Hospital, which are in most cases sufficiently full for the course and the severity of the cases to be fairly accurately judged. The records chosen were examined from the point of view of estimating the value of medical treatment, transfusion, and surgical treatment, in dealing with uncomplicated urgent bleeding of the stomach and duodenum.

CASE RECORDS

The records of 262 cases have been examined, belonging to the years 1929–33 inclusive. These comprise:—

(*a*) All cases admitted to hospital *on account of* recent hæmatemesis or melæna, with the exception of those in which the clinical diagnosis of cirrhosis of the liver was unequivocal. "Recent" means occurring within 14 days before admission; all cases were admitted because they bled, and would not have been admitted when they were, had they not bled.

(*b*) All cases manifesting hæmatemesis or melæna of significant amount while in hospital, following admission on other grounds, excluding, however, cases of post-operative bleeding. By "significant amount" is meant several ounces or more.

From these 262 cases 7 have been discarded, all of them fatal ones, on the ground that in 4 of them serious complicating disease was present in organs other than stomach or duodenum and largely contributed to death, and that in 3 cases of bleeding ulcer death occurred from perforation.

Of the remaining 255 cases, 27 died, directly or indirectly from hæmorrhage, giving a mortality figure for what it is worth of 11 per cent. Of the whole series of cases, many suffered relatively small loss of blood, were never in danger of their lives, and never caused anxiety to those in charge of them. They were treated medically, and for the purpose of this inquiry must be set on one side. The remainder are the grave cases, in whom the bleeding constituted a threat to life, and these have been retained. They comprise (*a*) the 27 fatal cases, (*b*) 15 cases in which bleeding had reduced the red cells to 2,000,000 or less, or the hæmoglobin (Dare) to 20 per cent. or less, (*c*) 21 cases in which blood counts were lacking, but in which a similar grave degree of blood loss was indicated by clinical condition, recurring hæmatemesis, or rising pulse-rate.

They are discussed in three groups according to their treatment.

CASES TREATED MEDICALLY

There were 31 cases, with 17 deaths. The medical treatment consisted fundamentally in complete rest

in bed, morphia, and by mouth either nothing at all or minimal quantities of water or ice. Some patients also received adrenaline or calcium lactate by mouth, saline solution rectally, or hæmoplastin subcutaneously.

A. *Patients who recovered* (14).—Ages: 22 to 63, average 41. Source of bleeding: chronic ulcers were proved by radiography or subsequent operation in 7 cases, 4 gastric, 2 duodenal, and 1 jejunal; acute ulceration or erosion was diagnosed in the remainder. In 6 cases hæmatemesis recurred once or oftener during the first few days in hospital; the remainder probably ceased to bleed on admission or shortly after.

B. *Patients who died* (17).—Among these is included an infant of two days which bled to death from a duodenal erosion without evidence of sepsis. The following observations concern the other 16 cases. Ages: 23 to 74, average 51. Source of bleeding: ulcers with macroscopic perforation of arteries in their bases were found post mortem in 8 cases (6 gastric and 2 duodenal), and carcinoma of the stomach was found in 3; post-mortem examination was disallowed in the remaining 5, 2 of whom (women aged 23, 25) were thought to have acute gastric ulcers, while the remainder probably had chronic ulcers. One patient died four hours after admission to hospital, 2 about 24 hours after admission, the others after longer periods. In 6 at least there was clear evidence of recurrent bleeding in hospital. Most of them died directly of exsanguination. A few showed respiratory infections (bronchitis or broncho-pneumonia) developing after the initial bleeding, and one woman of 74 had thrombosed pelvic veins and pulmonary infarcts; these were contributory causes of death, but were themselves presumably secondary to the hæmorrhage. If the woman of 74 be excluded on account of her age, together with the 3 malignant cases, there remain 12 patients who died of gastric or duodenal hæmorrhage, under medical treatment; these constitute about one-third of the grave cases so treated, and they are deaths which should not be regarded complacently.

CASES TREATED MEDICALLY WITH THE ADDITION OF BLOOD TRANSFUSION

In this group there were 11 cases, with 3 deaths. The ages were from 15 to 64 (average 41). The sources of bleeding (judged usually from clinical evidence or subsequent X ray examination) were: chronic gastric ulcer in 3 cases, chronic duodenal ulcer in 4, chronic jejunal ulcer in 1, acute ulceration in 2, and carcinoma of the stomach in 1 (non-fatal).

The following are three examples of recovery following transfusion:—

CASE A.—Female, aged 64. History of hæmatemesis at the age of 23, but no subsequent dyspepsia. She vomited blood 10 times during the 4 days preceding admission, and was admitted extremely pale and collapsed, with an almost imperceptible pulse, rate 130. She was given morphia subcutaneously and ice to suck; 3 hours after admission she received a transfusion of 350 c.cm. citrated blood. The pulse-rate fell steadily to 80 in 24 hours, no further hæmatemesis occurred, a modified Lenhartz diet with alkalis was begun on the fourth day, and she made a good recovery. Subsequent X ray examination showed evidence of ulceration on the posterior wall of the stomach, and what appeared to be an old spontaneous gastro-jejunal fistula.

CASE B.—Male, aged 26, had suffered for years from attacks of abdominal pain after food. For 3 weeks before admission he had pain every day. On the day of admission he vomited half a pint of blood before being sent to hospital, and had 4 further hæmatemeses in hospital. He was pale with a pulse-rate varying between 86 and 116, red cells 2,000,000, hæmoglobin (Dare) 18 per cent. A transfusion of 360 c.cm. was given, and a modified Lenhartz diet with alkalis was begun. Hæmatemesis recurred on the day after admission and again on the fourth day, causing the pulse to rise from 102 to 134. A second transfusion was then given, after which recovery proceeded slowly but steadily, notwithstanding a further small hæmatemesis on the sixth day. Subsequent X ray examination showed an irregularity high on the lesser curve, interpreted as a healing ulcer.

CASE C.—Female, aged 58, had suffered from attacks of abdominal pain for 13 years and had once been operated on. For a week before admission she had been pale and felt giddy, and passed tarry stools. On admission her pulse-rate was 106–112, red cells 2,600,000, hæmoglobin 38 per cent. She was treated on the usual medical lines, but on the seventh day became extremely weak and ill, with temperature 100°, pulse 130. Melæna continued, her condition showed little change for the next 5 days, and the pulse-rate remained about 120–124. A large transfusion (900 c.cm.) was then given. Next day the pulse was down to 100–108, the melæna soon ceased, and recovery proceeded. Subsequent X ray examination showed a gastro-jejunostomy and duodenal deformity. The immediate result of this large transfusion was to raise the blood pressure from 115/65 to 125/75 mm. Hg; an hour later it had fallen again to 110/70 mm. Hg.

The details of the three cases in which death followed transfusion are these:—

CASE D.—Male, aged 51, had had periodic dyspepsia for 4 years. An attack, with epigastric pain after food, began 2 weeks before admission, melæna occurred 2 days before admission, and on the day of admission he vomited blood and fainted. He was admitted pale and somewhat collapsed, with a pulse-rate of 100, red cells 3,000,000, and hæmoglobin 30. He was given morphia, and nothing at all by mouth. Hæmatemesis (37 oz. in all) occurred 3 times in the first 24 hours, but not subsequently. The temperature rose in the first 3 days gradually to 103°, and the pulse record fluctuated, sometimes rising to 150. Subcutaneous saline was given. He then became mentally deranged and restless. On the fourth day he received a transfusion of 500 c.cm. of blood, but without showing any improvement. Morphia failed to control his semi-delirious condition, and on the sixth day, with pulse rising to 160, temperature 102·5°, and no increase in respiration-rate, he died. Post-mortem examination was not allowed, but the cause of death was no doubt continued bleeding. The anæmia precipitated the mental condition, and the resulting restlessness probably helped to maintain the bleeding.

CASE E.—Male, aged 51, was admitted to hospital for investigation, complaining of upper abdominal pain and vomiting for 3 weeks. While in hospital he suddenly became weak and pale; next day he vomited blood, his pulse rose to 122, and blood examination showed 1,300,000 red cells and 20 per cent. hæmoglobin. There was little change for 2 days, and he was then given a transfusion of 350 c.cm. The following day he developed œdema of the lungs, his temperature rose to 106°, and he died. Post mortem a chronic duodenal ulcer was found with an eroded artery in its base; the lungs were œdematous. Death appears to have been caused by acute heart failure rather than by anæmia; this may have been an abnormal reaction to the transfusion.

CASE F.—Male, aged 30, had undergone a gastro-jejunostomy for duodenal ulcer 7 years previously, and had had pain and melæna on two subsequent occasions. He vomited blood on two successive days, and was then admitted pale and collapsed, with a pulse-rate of 110. He was treated medically. A rise in pulse-rate to 150 indicated further bleeding on the day after admission, but it fell again to 80–90, and on the fifth day he appeared to be doing well (hæmoglobin 39 per cent.). On the sixth day he collapsed and his pulse rose steadily to 125. His condition was then extremely grave, and the physician in charge described him as moribund. A transfusion of 600 c.cm. was given. The steady rise in pulse-rate con-

tinued, and he died 6 hours later. Post mortem a chronic jejunal ulcer was found with an eroded artery in its base.

CASES TREATED SURGICALLY

There were 21 cases, with 7 deaths. The ages ranged from 24 to 62 (average 45). In all of them operation was undertaken with the object of stopping bleeding. The details of these cases are shown in the accompanying Table. The patients, many of whom had been referred by physicians, were all gravely ill from loss of blood, with the exception of the first two, in whom the bleeding was apparently somewhat less severe and transfusion was not given.

GROUP III.—CASES TREATED SURGICALLY

No.	Sex and age.	Operative procedure.	Result.
1	F. 59	G.U. embedded. Gast.-jej.	Recovery.
2	M. 45	G.U. found. Gast.-jej.	,,
3	M. 46	G.U. excised. Trans.	,,
4	M. 53	G.U. found. Bleeding artery ligatured. Trans.	,,
5	M. 47	G.U. found. Spouting arteries ligatured. Trans.	,,
6	M. 53	G.U. excised. Trans.	,,
7	M. 36	G.U. found. Coronary arteries ligatured. Trans.	,,
8	M. 29	Bleeding area in stomach close to a gast.-jej. stoma found and embedded. Trans.	,,
9	M. 41	D.U. embedded. Trans.	,,
10	M. 54	D.U. found, pylorus occluded. Gast.-jej. Trans.	,,
11	M. 41	D.U. embedded. Gast.-jej. Trans.	,,
12	M. 33	D.U. embedded. Gast.-jej. Trans.	,,
13	M. 53	No ulcer found. ? Cirrhosis of liver. Trans.	,,
14	M. 51	No ulcer found. Trans.	,,
15	M. 41	G.U. excised. Trans.	Death 2 days later. No P.M.
16	M. 43	G.U. excised. Trans.	Death 6 days later from broncho-pneumonia.
17	M. 57	G.U. embedded. Gast.-jej. Trans.	Death 4 days later. Mentally disordered. Increasing pallor. No P.M.
18	M. 47	Gastrotomy. G.U. not found. Trans.	Death 2 days later from hæmorrhage and broncho-pneumonia. P.M.: eroded arteries in a high G.U.
19	M. 24	D.U. embedded. Gast.-jej. Trans.	Collapse and death immediately after operation.
20	M. 62	Anterior D.U. embedded. Gast.-jej. Trans.	Death 2 days later. P.M.: eroded arteries in base of a *posterior* D.U.
21	M. 32	D.U. embedded. Gast.-jej. Trans.	Death from hæmorrhage 5 days later, after 2 further transfusions. P.M.: eroded artery in base of D.U.

G.U. = gastric ulcer; D.U. = duodenal ulcer; P.M. = post-mortem examination; Gast.-jej. = gastro-jejunostomy; Trans. = transfusion.

DISCUSSION

For the reasons mentioned in the introduction no valid statistical conclusions can be drawn from these case- and mortality-records. They do, however, broaden the outlook of anyone who has had some experience of similar cases. The attempted separation into less severe cases and grave cases throws into relief the fact that a large proportion of the latter (27 out of 63) died. Though the line of separation is not a hard-and-fast one, yet it is nearly always possible to say clinically whether a given case is grave or not. It is therefore well to know that 3 out of every 7 grave cases are likely to be fatal. This is obscured by the common method of expressing the mortality-rate as a percentage of all cases. Whether the figure, 3 out of 7, obtained from this series holds exactly for other series does not affect the argument. Since this series has a general mortality-rate of 11 per cent., it is probably a fairly typical series and justifies the inference that something between one-fourth and one-half of grave cases of gastric and duodenal bleeding end fatally.

There is no means of predicting with any accuracy which grave cases will die. Under purely medical treatment some go apparently very near to death and then recover; others die unexpectedly, or develop unforeseen respiratory or mental complications which turn the balance against them. Patients with a dyspeptic history suggesting chronic ulcer, and patients who have not had dyspepsia, as well as malignant cases, are found both among the recoveries and among the deaths. Any attempt therefore at further subdivision of grave cases with a view to individual prognosis seems useless.

It remains simply to review methods of treatment and to attempt to assess them empirically. In this series the mortality was heaviest among the cases treated medically; this remains true when the malignant cases and those at the extremes of age are excluded, and it definitely lays the conservative teaching of medical treatment in *all* circumstances open to criticism. The results of a surgical attempt to deal directly with the bleeding point, in a group of cases of similar severity, appear slightly better; they show at least that, in expert hands, operation on these exsanguinated patients is not necessarily a sentence of death. The middle group of cases, treated medically with the addition of one or more blood transfusions, deserves closer consideration. It showed—for what it may be worth—a lower mortality than the other two groups; and of its three fatal cases, one was already mentally deranged and another was moribund when the transfusion was given. Eight cases, however, were transfused while still bleeding, or shortly after the cessation of bleeding, and they recovered. This sets the evidence of experience against the theoretical view that transfusion, by raising the blood pressure, will merely increase the loss of blood from the bleeding vessel or vessels, and in that respect is in line with the experience of those who treated secondary hæmorrhage in war wounds by transfusion.

From a review of the whole series of cases studied in this paper the following recommendations emerge for the management of gastric and duodenal bleeding (hæmatemesis and gross melæna):—

1. A distinction should be made, clinically, between grave cases and less severe ones. Recurrent bleeding is often but not always grave. Cases in which the red cells fall below 2,000,000 or the hæmoglobin below 40 per cent. (on a scale on which the normal is 100 per cent.) will usually be grave. The distinction is to be made, however, on consideration of the whole clinical picture.

2. The less severe cases should be treated on the accepted medical lines.

3. The grave cases should be treated medically, in bed, with sufficient morphia to ensure complete rest; and a transfusion of about 500 c.cm. of blood should be given, without moving the patient from his bed, after careful cross-grouping.

4. If further bleeding is indicated by subsequent hæmatemesis or rising pulse-rate, the transfusion should be repeated once or twice within the next 24 to 48 hours, or when necessary.

5. If bleeding still continues and the patient's condition deteriorates, operation should be promptly undertaken, along with a further transfusion. The operation should probably be restricted to the minimum procedure necessary to find and secure the bleeding point.

These recommendations are substantially the same as those given by Hurst in his book on "Gastric and

Duodenal Ulcer" in 1929. Bastedo in America and Tzanck in France agree in advocating transfusion in addition to medical treatment for grave cases, and in reserving surgery for those few cases in which the bleeding continues in spite of repeated transfusion. This course does not appear to have been widely practised in this country; it was not considered by any of the four opening speakers in a recent discussion on the treatment of hæmatemesis in the sections of medicine and surgery of the Royal Society of Medicine. This paper is a plea for its more extended trial.

I am indebted to the physicians and surgeons of the London Hospital for their permission to use the records of their cases.

REFERENCES

Bastedo, W. A.: New York State Jour. Med., 1927, xxvii., 290.
Chiesman, W. E.: THE LANCET, 1932, ii., 722.
Hurst, A. F., and Stewart, M. J.: Gastric and Duodenal Ulcer, London, 1929.
Tzanck, A.: Bull. et mém. Soc. méd. hôp. de Paris, 1932, xlviii., 866.
Royal Society of Medicine: Discussion on Hæmatemesis. See THE LANCET, March 17th, 1934, p. 572.

CARCINOMA OF THE RECTUM*

BY DUNCAN C. L. FITZWILLIAMS, C.M.G., M.D. Edin., F.R.C.S. Eng.

SENIOR SURGEON TO ST. MARY'S HOSPITAL, PADDINGTON, AND MOUNT VERNON HOSPITAL FOR CANCER RESEARCH

CARCINOMA of the rectum forms an important part of the carcinomata which infest the intestinal tract. Of the different portions of that tract cancer of the oral cavity is one-third, that part of the tract extending from the œsophagus to the rectum produces less than a third, and the small remaining portion of the bowel makes up for more than a third.

Men and women are affected in equal numbers. The age-incidence is curious as it attacks people from puberty to old age, but there is this difference—in cancer of the rectum there are more people affected in the teens than in cancer of any other part of the body. There are 11 per cent. under 30, and 4 per cent. under 20 years of age. Between 50 and 60 are the commonest ages.

Pathologically it is very simple; it is an adenocarcinoma, starting in the cylindrical cells of Leiberkuhun's glands. The only exception to this is a squamous-celled carcinoma which starts at the anal margin and is analogous to carcinoma of the lip. From here it may spread to the rectum, but I am going to disregard this form. The start of cancer must presumably be a small ulcer or a warty papilloma; in many cases we see a well-established cancer and close by a wart still in the innocent stage. High up in the rectosigmoidal region it tends to spread round the bowel so as to form what is called a string stricture. Lower down, in the ampulla of the rectum, it usually starts in the posterior wall, while near the anal canal it tends to start in the anterior wall.

There are three varieties or forms of growth, though microscopically they are all the same. They are:—

1. The papilloma or cauliflower-like mass where growth is pronounced and ulceration at a minimum. Here it forms a prominent mass in the bowel, spreads superficially and does not contract the walls—in fact, it may balloon the bowel considerably. I have seen a mass in the rectum considerably larger than a shut fist. It only affects the bowel wall superficially for a considerable time, and is therefore the least malignant form; though it may give rise to a considerable amount of obstruction by its size alone, the glands are often only enlarged by sepsis.

2. The adenoid or common form is the opposite, as here growth is at its minimum and destruction at its maximum. A shallow ulcerated area with hard edges is the result. This spreads round the bowel, rapidly infiltrating the muscular coat, and is therefore highly malignant affecting both the glands and the liver. It stenoses and obstructs the gut rapidly.

3. The colloid form is rare and is really a degeneration of the other two types.

METHOD OF SPREAD

Growths of the rectum tend to spread transversely round the bowel across the lumen, superficially in the mucous membrane; the penetration of the muscular coat is slow. Once it has penetrated the muscular coat the matter is more serious as it gains the perirectal space. This is a considerable and roomy space filled with fat which allows the bowel to expand and fill with its contents and then to collapse as its contents are voided; a certain pump-like action is therefore present which tends to spread carcinomatous cells. Hence the fascia propria or lining membrane of the pelvis becomes infected and, lastly, the neighbouring organs—namely, the vagina, uterus, prostate, bladder, and the sacrum. The veins of the bowel are important, as it is by this means that the secondary growths reach the liver. Our old teaching was that sarcoma was spread by the blood stream and carcinoma by the lymph stream. We now know that carcinoma spreads by both routes very easily, the fact of the matter being that the delicate cells of carcinoma are destroyed, being filtered out of the blood stream by the lungs, and many years ago observations were made of the difficulty these cells had in growing in the lungs when secondarily deposited there. Carcinoma cells, however, grow and flourish very readily in the liver when carried there, hence it is that the early secondary deposits are often found in the liver even before any glands can be felt affected. This very important point in treatment and prognosis will be referred to later.

The lymphatics in the bowel wall drain into the subperitoneal lymphatics where the peritoneum is present, and in other situations into the lymphatics of the perirectal fat directly. From here the lymph drains into the lymphatics which lie along the superior hæmorrhoidal vessels—the rectal glands of Gerota. From here it passes mainly up the mesosigmoid, along the inferior mesenteric vessels to the bifurcation of the left common iliac vessels, and so to the aortic glands.

Some lymph may pass downwards to the inferior hæmorrhoidal vessels, through Alcock's canal to the internal iliac glands whence it joins those mentioned above. Or the lymph may pass out with the levator ani muscles again to the internal iliac glands.

SYMPTOMS

Unfortunately cancer of the rectum in its early stages is as silent a disease here as elsewhere, and may quite well exist from six to twelve months without giving rise to any noteworthy symptoms. The earliest symptom, if indeed it can be called such, is for the bowels of a person of regular habits to become slightly constipated. This is due to inertia of the sigmoid and some interference with the normal peristaltic action. This, however, is hardly likely to create much alarm or send the person to seek medical advice. This constipation may alternate with mild diarrhœa, but this again is not

* A clinical lecture given at St. Mary's Hospital Post-Graduate Course.

alarming if the person is trying to regulate his bowels with unaccustomed purgatives.

The symptom which should attract the attention of the medical man and at once rivet his attention is the history of what the patient terms a slight diarrhœa which lasts three weeks or a month. Little is passed at a time, there is no straining but perhaps some mucus. The bowels act after meals or after hot drinks, not more than three or at the most four times a day. Later a little blood may be noted.

In the adenoid form stenosis occurs and the diarrhœa is equally well marked as only fluids can pass the stricture, but here there is little mucus and seldom any blood. If the growth is low down in the bowel there may be discomfort, and the patient thinks he has piles as there is a feeling of incomplete relief after motions. In these lowly situated growths the history is so often the same that I will recount a case.

The person, as I have already stated, thinks he has piles; he talks to his friends, one of them is sure to have had piles, and confirms his views. Often the friend tells him what to do and prescribes the remedies that were beneficial in his own case. As this does little good he eventually meets his doctor and says casually, "Oh, Dr. A., I have been suffering lately from piles—nothing much you know, but they are uncomfortable." It is in the next few minutes that his fate is decided. If Dr. A. is a careful man he says, "Well, come and see me to-morrow and I will examine you," and the next day he puts his finger in the rectum, the growth will be felt, the diagnosis made, and he may be saved. But if Dr. A. is haphazard and believes what his patient says and does not examine him, the golden opportunity is lost and the patient is surely doomed. Remember that you must always put your finger in the patient's rectum the first time you see him about his piles, for if you do not you will never do it later; you will think you have done so and the opportunity for early diagnosis is lost. Later, when the treatment you have advised does not act, you will change it or tell him to persevere; so time goes on and the condition slowly gets worse, until he is thoroughly fed up with it and goes on advice—probably of a friend—to see Dr. B. Now, curiously enough, however careless you may be of your own patients you are never careless in the case of patients coming from the opposition, and Dr. B. puts his finger in the rectum and diagnosis is made. The wife or the friends are told the truth, the patient suspects—he knows well enough that Dr. A. never examined him—and I leave it to your imagination as to what is said in the provincial town about Dr. A. The other and more happy variation of the story is for Dr. A. at last to examine the rectum after a delay of perhaps six months. In my ward at the moment are patients who can give both these histories.

As time goes on, in any form of the disease ulceration may occur or become more marked and with this pain will appear, a dull aching in the region, mucus and blood will become more marked, and pus will be seen. In the later stages more depressing symptoms appear, the rectal wall becomes penetrated, and there is spread to the adjacent organs. Pain is noted down the back of the thighs from involvement of the sacral nerves. Colic and distension accompany constipation and diarrhœa. The chronic obstruction may at any time become an acute affair. Loss of weight is now a feature of the disease. The prostate may be involved, upsetting the function of the bladder. Fistulæ may form between the rectum, bladder, or vagina. Lastly, œdema of the legs appears, jaundice ensues, and there is general carcinomatosis and death.

DIAGNOSIS

When the various conditions which exist in the rectum are considered there appears very little which can simulate a really established cancer. When, however, we look for so-called classical symptoms and find them, we at the same time find a doomed case. This being so it only remains to mention the conditions which might be mistaken for the early stages.

Intussusception of a simple papillomatous growth may take place, but the tumour can be felt floating in the bowel. The lumen is in the centre of the tumour, and the finger can be passed round it. There is often a lump felt in the left iliac fossa and there may be signs of chronic obstruction. A villous papilloma is sometimes felt as a soft growth which can be moved about with the finger; it secretes a watery fluid which may cause frequent evacuations.

An adenoma may be single or multiple; it is firmer than the villous tumour, lobulated but devoid of induration. It may be pedunculated or sessile. It is as well to bear in mind that these papillomata or warts are liable to become carcinomatous here as elsewhere. When multiple, it is curious to find that more than one may be taking on malignant characteristics. Multiple cancers of the rectum, which are not uncommon, start in these warts if they are not implantation cancers from a growth high up. I show you here a specimen where there are four separate carcinomatous ulcers and some innocent warts.

An adenomyoma starting in the cervix or vagina may form a prominence into the rectum. Such cases naturally are rare and not easily recognised. They are always defined and very hard, and the mucous membrane moves freely over them. Some cases of diverticulitis may simulate early carcinoma, but X ray examination will distinguish them at once.

Diagnosis is made from the history of the case, the examination of the abdomen, the examination of the stools for blood and mucus, and the digital examination of the rectum. Added to these there is the special examination of the rectum with the sigmoidoscope; often an anæsthetic may be required if this is to be satisfactory. Lastly, the barium enema combined with actually seeing the opaque fluid run into the bowel under the X rays, when a better idea is obtained than from the photograph, of the extent of the growth and the mobility of the bowel which can be seen to move or remain fixed when manipulated by the hand on the abdominal wall.

In performing the digital examination in the female it is better to make her lie upon her right side, but in the male there is nothing to compare with the knee-elbow position. The mobility of the growth should be made out and the extent, if possible, of the constriction—if the finger can be inserted through it—the depth of the ulceration, and the condition of the edges. It may quite well be that a growth which started well out of reach of the finger may descend, partly by growth and partly by intussusception to within easy reach of the finger, so that an examination may previously have been made by the doctor and nothing discovered, then at a later date the consultant may easily feel it.

TREATMENT

Cancer of the rectum is only partly accessible, therefore the diagnosis is seldom made at an early date and inoperable cases are common, but how common they are is perhaps not realised. It is safe to say that 75 per cent. of the cases are inoperable when diagnosed. Even in private practice 50 per cent. are inoperable. In the figures recently published for one of the London hospitals, out of 123 cases only 29 were operated on, and of these 9 died from the operation.

The chief general points which militate against operation are the age of the patient, for the older they are the worse the result. There are few cases over the age of 65 who are fit to undergo the radical operation. Stout people bear the operation badly. Any general condition such as a bad heart, arterio-sclerosis, high blood pressure, albuminuria, diabetes absolutely contra-indicates radical measures. Lastly, we have the findings at the colostomy operation which so often decide one against further surgical procedure.

Of the type of operation the old form of Kraske is gone. We now have the abdomino-perineal operation or one of its modifications such as Coffey's operation, or the perineal operation which is a modification of Kraske's. Whatever operation is adopted a preliminary colostomy should be insisted upon. The health of the patient improves immensely after a colostomy, the bowel is washed free, and the septic absorption is diminished, colic and pains cease, and the patient is at ease. Therefore it is the best preliminary for the next operation if one is to follow. The chief advantage, however, is the information gained in performing the operation, for we do far more than establish a colostomy. What we do is of paramount importance both to us and to the patient, and too often the important parts of this procedure are overlooked, and only a colostomy is performed. The incision must be large enough to enable the hand and arm to enter the abdominal cavity. The hand passes to the pelvis and the extent, mobility of the growth, and spread of the disease is determined. The rectal and abdominal glands are sought for and felt, the peritoneum round about is searched for suspicious plaques, and, lastly, the dome and under-surface of both lobes of the liver are investigated. If there is already a secondary growth in the liver, further operation is out of the question. This is the part of the operation which too often is overlooked, it is not mentioned, as far as I know, in any book, but its importance must be clear to you all, for what can be the use of submitting a patient to a risky operation like the radical removal of the growth when his death warrant is already signed and sealed in his liver?

Lastly, there is the advantage that the rapidity of growth diminishes after colostomy is performed. The rapidity of tumour growth depends upon its vascularity, the irritation of the fæces passing over the ulcerated surface or squeezing through the stricture must increase this vascularity. As a result of colostomy the bowel remains empty, disused, and relatively anæmic; growth in consequence is proportionately slower.

Surgeons sometimes have cases sent to them for operation upon whom a colostomy has already been done. At this operation no attempt perhaps has been made to ascertain the operability or the presence of secondary growths, and in any case it may be impossible to communicate the knowledge to the second surgeon. If we operate we do so in the dark without the knowledge so essential to success, and we run the risk of discovering that the case is inoperable half-way through the operation. If the colostomy has been done to relieve an acute obstruction it may have been impossible to find out these points, owing to distension or the critical state of the patient. My rule in such cases is to open the peritoneal cavity and ascertain the state of affairs; otherwise harm may be done in stirring up an inoperable case or performing a useless operation upon a person who already has secondary masses in the liver.

Should the case be unsuitable for operation the patient needs to be taught the right way to live after colostomy is established. The bowels act by habit, and habit can be taught to the sigmoid colon just as it can to the bowel below it. If the patient wants comfort he must take trouble, and if he will take trouble with his colostomy opening it is the rarest thing for him to be let down. Each finds out what suits him best and the more trouble he takes with the details the greater is his comfort. I have a patient at the present moment who attended Ascot last year and also the garden party at Buckingham Palace, and I do not think any of her friends even suspect her condition. The patient with a colostomy will tell you he has no inconvenience except when washing himself. A tube is passed and the large bowel washed empty and the fluid drawn off; a stomach-tube with lateral holes should be used. With practice it can be passed round to the cæcum; it is important to draw off all the fluid so that there will be no leakage later. For the wash-out there is nothing so useful as the rubber kidney tray, made by Down Bros. Ltd. at my suggestion, which takes the shape of the body. A piece of gauze smeared with vaseline is applied over the colostomy opening, and an abdominal belt with a flat piece of thick rubber is worn over it. This should prevent all leakage until the next wash-out is given. Colostomy belts with cups or receptacles should be avoided.

A diet is chosen which does not give rise to wind, but flatus even only rarely escapes and is absorbed again. The lower portion of the bowel should be washed out with a mild antiseptic, such as weak sanitas, as required; some do it twice a week, depending on how much secretion there is. Needless to say, it should be freed from fæces as soon as possible.

Now can anything be done to check the growth of the tumour? I think it can. A month to six weeks after the patient goes home he reports to me again. I pass down into the lower portion of the bowel through the colostomy opening a specially made narrow sigmoidoscope tube and examine the growth and insert a well-protected tube of radium, containing about 30 mg. of radium, into the stricture. This is left in place for four to five hours. Next day the tube is placed in the stricture from the anal orifice for the same length of time. The patient is then given one free day and the same thing is repeated. In this way a dose of about 500 mg. hours of radiation is given directly to the growth. This is repeated at intervals of about a month for three times, and at the end of that time the growth in many cases has almost disappeared, or at all events is sterilised and either does not grow at all or grows very slowly. I have several cases in which this has been carried out, and now no growth is perceptible. This, of course, has no effect upon secondary growths in the liver or intestines and holds out no hope of cure, but it prevents the spread to the neighbouring organs and the formation of fistulæ which render the last weeks of life so trying to these patients.

The cause of death in these cases is from secondary masses in the liver and elsewhere; this as a rule comes rapidly in the end, so that the patient suffers little.

AYRSHIRE HOSPITAL SERVICES.—The Ayrshire county council has adopted a scheme for the centralisation of the hospital services of the county under which a central hospital will be built at Kilwinning at an estimated cost of £210,000.

THROMBOPENIC HÆMORRHAGIC PURPURA

DUE TO IDIOSYNCRASY TOWARDS THE HYPNOTIC SEDORMID

ALLERGOTOXIC EFFECT

By F. E. Loewy, M.D. Vienna, M.R.C.P. Lond.

"Werlhof's disease"—the severest form of thrombopenic hæmorrhagic purpura—presents a well-defined clinical picture: a hæmorrhagic diathesis characterised by markedly prolonged bleeding time and tendency to petechial hæmorrhage. Slight injury to skin or mucous membranes by knocking, pricking, or pinching causes extravasations of blood and, after compression of the arm for about five minutes by a tourniquet (sphygmomanometer-cuff), numerous petechiæ appear in the area of passive congestion. The essential feature is the practical absence or severe reduction of blood-platelets.

This thrombopenic hæmorrhagic diathesis occurs regularly when the bone-marrow with its megacaryocytes has been extensively damaged by proliferating lymphadenoid (leukæmia) or neoplastic tissue, by excessive irradiation (radium, X rays), or by prolonged influence of certain poisons (benzol). Not infrequently the cause remains unknown—"essential thrombopenia." The spleen has been blamed in these cases, but the beneficial effect of splenectomy proves nothing, as no characteristic abnormality has been found in the excised organ and splenectomy regularly causes a rapid and sustained increase of platelets in healthy persons.

I have been able to prove that a typical case of Werlhof's disease and two milder cases of thrombopenic purpura were due to prolonged administration of the new hypnotic Sedormid (allylisopropyl-acetylurea) to hypersensitive patients. In the first case, after recovery, thrombopenic purpura was produced at will by giving ½–1 tablet of the drug (tablets of grs. 4 each). The elucidation of these cases was by no means simple, as sedormid has up to now been considered perfectly harmless and my patients had taken the drug repeatedly for some time without apparent ill-results.

THE CASES

Case 1.—The first patient was a gentleman of 61 years, very highly strung and neurasthenic but never seriously ill. For the last six to ten years he had complained of general lassitude, had suffered frequently from indigestion with flatulence (irritable colon), and occasionally from insomnia. His blood pressure was low (118/85). The liver was slightly enlarged and hard, but not tender; the spleen was never palpable. At an alpine spa he was suddenly taken ill on Dec. 31st, 1930, with vomiting, flatulence, and slight rise of temperature. The diagnosis was at first coronary thrombosis, later influenza. Recovery was very slow, and delayed by general weakness, insomnia, constipation, and slight rise of temperature on and off for several months. He felt better during the summer and visited several spas. In September again he suffered from general weakness and had pain in both arms. A few pale purpuric spots were noted on the trunk on Sept. 10th. A week later marked purpura appeared on the right arm, which had been massaged. The extraction of a tooth was followed by severe hæmorrhage and rapid deterioration of the general condition. On Sept. 23rd there was purpura on both legs with large bruises over the right thigh; on Sept. 28th melæna; and on Sept. 30th hæmaturia.

On Oct. 5th I found the patient seriously ill. The whole body was covered with petechiæ and bruises; he passed tarry fæces and urine thick with blood. Bruises were easily produced anywhere by slight tapping. Bleeding time was prolonged over many hours. The blood count (Dr. H. Letheby Tidy) showed: hæmoglobin, 58 per cent.; red cells, 2,700,000; colour-index, 1; white cells, 9600 (polymorphonuclears 74 per cent., small lymphocytes 15 per cent., large mononuclears 3 per cent., eosinophils 4 per cent., myelocytes 4 per cent.); platelets, 22,000. In the evening hardly any platelets were seen in one smear. The condition seemed extremely dangerous and splenectomy was considered. A transfusion of 600 c.cm. of citrated blood was given, with immediate marked improvement of the bleeding tendency. He had a severe rigor. On Oct. 6th the tourniquet test was negative, and there were no more new spots. On Oct. 7th his hæmoglobin was 52 per cent.; red cells, 2,350,000; white cells, 6400; platelets, 120,000. On Oct. 8th his urine was clear, the fæces lightly coloured, and the platelets over 120,000; the tourniquet test was negative. On Oct. 9th the platelet count suddenly dropped again to 55,000; bleeding time was prolonged, and the tourniquet test positive but there was no spontaneous purpura. Hæmoglobin was 54 per cent.; red cells, 2,650,000; white cells only 3600 (polymorphonuclears 86 per cent., small lymphocytes 8 per cent., large mononuclears 3 per cent., and eosinophils 3 per cent.). The slight thrombopenia continued for the next two days without marked change in the general condition.

Lord Dawson, who had seen the patient in consultation, had suspected hypnotics as the cause of the illness but the patient had firmly resisted any attempt at withdrawal. After the transfusion he received grs. 7½ of Medinal nightly. On recovering strength he became more restless and insisted on receiving, in addition to the medinal, his favourite hypnotic sedormid, which he had been taking frequently in doses of 1–2 tablets since December, 1930, and especially regularly for several weeks preceding the transfusion. Two tablets of sedormid had been given during the night on Oct. 8th and 9th, and one more tablet on Oct. 10th. The recurrence of thrombopenia thus coincided with the resumption of sedormid. After Oct. 10th I allowed only bromides in addition to the usual medinal. From Oct. 12th onwards the platelet count rose again rapidly. On Oct. 16th the hæmoglobin was 66 per cent.; the red cells, 3,500,000; white cells, 9600; platelets, 360,000. On Oct. 23rd I again gave one tablet of sedormid to test the effect. Promptly the next morning purpuric spots appeared on both legs; the bleeding time was slightly prolonged and the tourniquet test positive, and there was slight hæmaturia. Only a few stray platelets were visible in one smear. The next day no further spots appeared, the tourniquet test was negative, and the platelet count rose rapidly and was normal again within a week.

I decided to make a final test on Nov. 4th. The platelets numbered then 502,000; red cells, 4,410,000; hæmoglobin, 87 per cent.; colour-index, 1; white cells, 12,600 (polymorphonuclears 43·5 per cent., lymphocytes 21·7 per cent., large mononuclears 7 per cent., eosinophils 27·8 per cent.). I gave half a sedormid tablet in the evening. After a good night numerous purpuric spots appeared next morning on the trunk, and especially on the right side, on which the patient had been lying. Bleeding time was prolonged over ten minutes, the tourniquet test was positive, and the temperature was normal. The platelets numbered 17,600. A blood smear showed slight leucocytosis (polymorphonuclears 46·7 per cent., lymphocytes 14 per cent., large mononuclears 9·3 per cent., eosinophils 29·3 per cent., basophils 0·7 per cent.). On Nov. 6th the platelets numbered 25,600; the tourniquet test was slightly positive. On Nov. 7th the platelets were 48,000 and the tourniquet test was negative. No more spots appeared, and on Nov. 19th the platelets numbered again 347,000. The case against sedormid was proved.

The patient is still under regular observation and has remained free from any signs of thrombopenia or hæmorrhagic diathesis. The platelets are always plentiful; there is frequently marked eosinophilia, and occasionally pruritus and complaints due to an "irritable colon." Skin tests with sedormid and the Prausnitz-Küstner test were negative.

Through the kindness of Dr. W. W. MacNaught I saw on June 1st, 1933, a second, less severe but

unequivocal case of thrombopenic purpura caused by sedormid.

CASE 2.—Mrs. A, a lady of 60, had taken sedormid with good effect in doses of ½–2 tablets nightly for several weeks in the spring of 1932, after an abdominal operation. Recovery was delayed by pulmonary infarcts. For the last five and a half weeks she had again taken 1–2 tablets nightly. About one week after resuming the drug in 1933 she noticed purpuric spots, later also large bruises on different parts. Fresh crops of petechiæ appeared every few days, in spite of treatment with calcium. She had severe bruising at the site of an intramuscular injection of horse serum, and retinal hæmorrhages. The patient complained about pains in various joints and headache, but was not feeling severely ill. She was very highly strung and had been suffering for years from "nervous indigestion." I found the bleeding time markedly prolonged (over eight minutes) and the tourniquet test positive. The platelets numbered 28,000; the hæmoglobin was 78 per cent.; the red cells, 4,000,000; the colour-index, 0·9; the white cells, 6800 (polymorphonuclears 45·9 per cent., lymphocytes 40·6 per cent., large mononuclears 4·1 per cent., and eosinophils 9·4 per cent.).

Sedormid was stopped and no more petechiæ appeared. A week later the bleeding time was normal again and a blood smear showed platelets in approximately normal number and in big clusters.

CASE 3.—I was called on Dec. 22nd, 1933, to see the third patient, a married woman aged 51, who was very worried about bleeding from the gums. This had started two days before, a few hours after a sedormid tablet had been taken. There were also numerous purpuric spots on the trunk and legs, but at the time of examination the bleeding tendency was already improved. The bleeding time was normal; the tourniquet test negative; the hæmoglobin 95 per cent. The platelets numbered only 36,000 per c.mm. The patient, who was very nervy, had taken sedormid in doses of ½ to 1 tablet repeatedly during the last year and had experienced during that time several attacks of purpura, and once a small retinal hæmorrhage. Sedormid was stopped and no further hæmorrhages occurred.

PATHOGENESIS OF SEDORMID PURPURA

Sedormid is an ureid (allylisopropyl-acetyl-urea) similar in constitution and action to adalin (diaethyl-brom-acetyl-urea), and has been in use for several years as a sedative and mild hypnotic, apparently without any ill-effects. It was stated [1] in February, 1933, that no allergic disturbances had been observed after sedormid. A recent publication on thrombopenic purpura after iodine [2] reports without details the case of a woman who developed thrombopenic purpura after taking minute doses of iodine for several weeks. She recovered, but later had two relapses, each time the day after taking sedormid. She is said to have had no sedormid before (!).

The text-books contain no reference to thrombopenic purpura after hypnotics. After prolonged use of adalin,[3] itching patches and "purpura Majochi" have been seen in a few cases, but no thrombopenia. After abasin [4] (acetyl-adalin) a man of 58 years developed not only purpura Majochi and polycythæmia, but later also a mild thrombopenia. Nirvanol is a hypnotic (similar to phenobarbital) which usually produces a "toxic reaction" with rash, fever, and eosinophilia if given in small doses daily for one to three weeks. This reaction has been used in the treatment of chorea but has proved dangerous in certain cases, and in the case of a 17-year-old girl was accompanied by severe thrombopenic purpura.[5] It is interesting that the "drug rashes" caused by ureids with an open chain of carbon atoms (adalin, abasin, and now sedormid) develop insidiously without rise of temperature, while barbiturates with a closed ring of carbon atoms (medinal, luminal, nirvanol) are apt to cause acute rashes with marked general disturbance.[3]

ALLERGOTOXIC EFFECT

In dealing with harmful effects due to prolonged administration of drugs—a subject of vast and increasing importance—it is necessary to distinguish:

1. *The direct toxic effect* due to overdose or cumulation and characteristic for each specific drug.

2. *The purely allergic effect* producing affections identical with those seen in consequence of an antigen-antibody reaction in protein anaphylaxis—e.g., serum disease. The illness—e.g., anaphylactic shock, urticaria, asthma—is the same in spite of enormous differences between the causative agents and depends largely on the constitution of the patient.

3. *The allergotoxic effect.*—In many cases an overdose can be excluded and a peculiar susceptibility due to gradual sensitisation of the patient must be assumed; the illness is, however, different from purely allergic reactions and fairly characteristic for the causative drug, which probably acts indirectly through influence on the protein metabolism. Such an allergotoxic effect is responsible for most "drug idiosyncrasies": for cinchophen disease, arsphenamine diseases (dermatitis, hepatitis, thrombopenia),[6] sulfonal hæmatoporphyrinuria, and also for sedormid thrombopenia.

SUMMARY AND CONCLUSIONS

Severe loss of blood-platelets and consequent hæmorrhagic diathesis have been caused by the usual doses of sedormid in certain hypersensitive patients who had received the drug for several months previously with apparently good result.

Repeated administration of a drug may lead to an illness due to sensitisation but unlike the typical purely allergic affections and distinctive according to the chemical nature of the drug: allergotoxic effect.

The modern hypnotics and sedatives are certainly valuable but never absolutely harmless, and careful supervision is required, especially with newly introduced drugs and hypersensitive patients with irritability of the digestive tract.

Cases of "essential" thrombopenic purpura may be traced to drugs even if these have been taken already for some time with no evidence of any ill-effect (arsphenamine, sedormid). If the patient receives a blood transfusion, as Dr. H. Letheby Tidy [7] postulates for all severe cases before splenectomy, time will be gained for closer investigation and an operation perhaps frequently avoided.

REFERENCES

1. Gutmann, M. J.: Deut. med. Woch., 1933, iix., 262.
2. Denning, H.: Münch. med. Woch., 1933, lxxx., 562.
3. Mulzer, P., and Habermann, R.: Zeits. f. d. ges. Neurol. u. Psych., 1930, cxxviii., 374.
4. Morawitz, P.: Deut. med. Woch., 1932, lviii., 375 (excerpt).
5. Duckett Jones, T., and Lesh Jacobs, J.: Jour. Amer. Med. Assoc., 1932, xcix., 18.
6. MacCarthy, F. M., and Wilson, R., Jr.: Ibid., p. 1557.
7. Tidy, H. Letheby: Brit. Med. Jour., 1930, ii., 1073.

THE BRISTOL HOSPITALS.—The overdraft of Bristol General Hospital now stands at £23,575, having been increased last year by £13,000. One-third of the 1933 in-patients (5470) found it impossible to make any contribution to the cost of their treatment. There were over 37,000 out-patients. The pressure upon the X ray, massage, and electrical departments is so great that it is necessary to spend £10,000 in adapting for their use the rooms in the old out-patients' department. In an address at the Lord Mayor's Chapel, Dr. E. J. Glenny said that there are 1000 beds in the Bristol voluntary institutions, each of which costs £5 weekly.

PAPER FILMS IN RADIOGRAPHY[1]

By J. V. Sparks, B.A. Camb., M.R.C.S., D.M.R.E.

CHIEF ASSISTANT, X RAY DEPARTMENT, ST. BARTHOLOMEW'S HOSPITAL; RADIOLOGIST, CITY OF LONDON CHEST HOSPITAL

THE possibility of the substitution of negative paper for the celluloid film was suggested in a paper read before the British Institute of Radiology in October, 1930, when Dr. J. F. Bromley described and showed examples, mainly in cases of fracture, demonstrating that even minute fractures of the carpal bones were readily distinguishable.

Little more was heard about the paper negative until samples began to appear from Germany about two years later, presumably owing to the fact that the paper was of inferior quality and was an innovation. For it must be realised that in fracture work the radiologist bears a great responsibility in cases where his findings are negative, and it would be a false economy to run the chance of missing a fracture through using what might be considered an inferior article. It was eighteen months ago that I started experimenting with the use of paper films in chest cases at the City of London Chest Hospital for the control of artificial pneumothorax cases.

It was soon found that the emulsion was so sensitive that fogging occurred within a few minutes with the ordinary dark room safe light, but this fault was obviated by placing the negative in the developer immediately it was removed from the cassette. At first it was thought advisable to take a celluloid and paper film of each patient so as to have an accurate comparison between the two. Subsequently, contrary to expectations, it was found that the lung detail in health and disease was so accurately comparable to that obtained on celluloid that I was able to place before the medical committee a scheme for the substitution of celluloid by paper films in certain cases, the object being economy without loss of efficiency.

At this time the English manufacturers came into the market and produced a paper film vastly superior to that supplied from abroad, and the quality of the emulsion has since improved further, and is of a very high standard at the present time. It was found that even greater attention to detail as regards penetration and exposure time was necessary as the latitude of the paper film was very small compared with that of celluloid, and errors of exposure could not be corrected by altering the subsequent development; in fact, if any error of technique was present it was not possible to correct it by subsequent intensification or reduction without spoiling the final result. A poor celluloid film is just poor, but a poor paper film is ghastly.

The paper film has been found to be definitely inferior for use in small children and for adults above the average size; neither has it proved of value for examinations after lipiodol injections where the films are purposely given a greater exposure than normally. Nor has it been found satisfactory for examinations in the oblique and lateral positions. The speed factor of the paper film with one screen shows from 40 to 50 per cent. increase in the exposure time over the celluloid film with two screens, suggesting that the emulsion on the paper film is the faster.

Paper films have been used exclusively at St. Bartholomew's Hospital during the past year for barium meal examinations, and have been found to be satisfactory for patients of normal size, when used in conjunction with a Potter-Bucky diaphragm, or Lysholm grid; they are inferior if used for stout patients or without the grid. I have found that a good paper film when viewed with strong reflected light compares favourably with the celluloid negative when viewed through daylight; it falls short of a celluloid film viewed under proper conditions, and though it will indicate the presence of tuberculous disease it might fail to show the tubercles in the lung which are essential to confirm the radiological diagnosis.

At the Victoria Park Hospital we have arranged for paper films to be taken of all cases, except those mentioned above, unless a request for celluloid is made by the physician. At the commencement of this scheme there was a greater percentage of paper films than celluloid, and now after working for 18 months by this method there are still about 40 per cent. of the chest cases taken on paper. Naturally such films are taken for economic reasons at the discretion of the physician; in a way they are a tribute to the skill of the lay technicians by whom all the radiograms are taken.

I can recommend the use of paper films in chest cases for the anterior view in patients of normal size provided that the apparatus is designed with a fine control of penetration and exposure when results can be obtained within about 10 per cent. of those obtainable with celluloid. They are in everyday use at Victoria Park Hospital—(1) as preliminary films to exclude disease, a celluloid examination being made in any case of doubt; (2) to watch the progress or retrogression of pulmonary disease; (3) in cardiac cases. They are also recommended for the control of the position of fractures where information about the state of union is not required, and for barium meal examinations. I cannot recommend their use in any department where there is no standardisation of technique, or where errors of exposure are controlled in the dark room.

These experiments have been made, primarily for economy, to enable the expenditure in the X ray department to be reduced. To give an idea how real such a reduction has been at Victoria Park Hospital, I may add that we have during the past year increased the number of X ray examinations from 3000 to 4000 without adding to the total film cost, and we hope during the ensuing year to effect an even greater saving through non-duplication. These figures are remarkable when one considers that if there is any query an additional celluloid film is taken.

I might add that the shadows on a paper film are negative shadows, comparable in density to those seen on celluloid, and that reproductions can be made from them equally satisfactorily.

[1] Dr. Sparks submitted a series of paper radiograms which compare favourably with celluloid films of the same subject. They are open to inspection at this office.—ED. L.

DONATIONS AND BEQUESTS.—The late Mrs. Edith Anne Thorpe, of Eastbourne, left £3500 to Epsom College and the same sum to the Medical Charitable Society of the West Riding of Yorkshire.—By will the late Mr. Thomas Craven, J.P., D.L., of Kensington Palace-gardens, London, left £1000 to the Manchester Royal Infirmary; £500 to the Salford Royal Hospital; £500 to St. Mary's Hospital, Manchester; £500 to the Hospital for Consumption, Manchester; £500 to the Manchester Children's Hospital; £500 to the Northern Counties Hospital for Chronic and Incurable Diseases; and £500 to the Belgrave Hospital for Children.

MEDICAL SOCIETIES

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM

THE annual congress of this society took place at the house of the Royal Society of Medicine from April 12th–14th, under the presidency of Mr. M. S. MAYOU. A discussion on the

Surgical Treatment of Unusual Forms of Squint and Heterophoria

was opened by Mr. Mayou, who dealt with a selection of cases from a series of 700 operations for squint. No ophthalmic surgeon, he said, had had many cases of the rarer forms of squint, and as the results were not generally known, there was a natural hesitation to operate at all for fear of making the condition worse, as might easily happen if the operation were faulty or done at the wrong period of life. Even such a common condition as hyperphoria was seldom operated upon in this country. He used the old method of tenectomy with advancement, so that he could see what he was doing. Provided the muscles were not pulled upon it was practically painless; he had done tenotomies in children of 3 years, and tenectomy in children of 5, without an anæsthetic. But he did not object to operating under an anæsthetic if the patient had good vision in both eyes and possessed a sense of fusion. When the patient was not under an anæsthetic the result was controlled during the operation by the Maddox rod test, with a light set in the ceiling of the theatre. In doing either tenotomy or tenectomy he did not separate the tendons from Tenon's capsule, as it gave a firm hold for the sutures, which were then not so liable to cut out. He used Japanese fishing gut, which was soft and easy to pull through. Low degrees of hyperphoria were treated by prisms; high degrees (which were accompanied by diplopia or torticollis) by tenotomy of the superior rectus. Speaking of partial tenotomy, Mr. Mayou said that unless the tendon was completely divided there was practically no result; he always inserted a tenotomy hook to make sure this had been done. For tenectomy he used the three-stitch method. When it was desired to increase the effect of the advancement the sutures should be placed further back, through capsule and tendon. The opposing muscles should be tenotomised in every case, partly in order to increase the effect, but in any case to weaken temporarily the muscle and so obviate traction on the sutures. Complete rest to the muscles was ensured by bandaging both eyes for seven days after operation.

Diplopia occurred in association with what was apparently a concomitant convergence in late syphilitic lesions of the central nervous system. It resembled that met with in encephalitis lethargica as it was always divergent. It was due, he thought, to a lesion of the convergence centre in the brain; he had seen four such cases between 35 and 45 years of age. Cases of ocular torticollis with hyperphoria were eminently suitable for operative interference, because if the hyperphoria was corrected, stereoscopic vision resulted immediately, and the head was brought to the normal posture. Congenital defect of external recti might occur on one or both sides, and was usually associated with convergence. Some unilateral cases might be due to a birth injury. There were two groups: one associated with enophthalmos, in which the internal muscles and the check ligaments appeared to be bound down on the inner side of the orbit; the other without enophthalmos. It was important to operate on these cases early in life; if they were left until later, diplopia resulted from the operation. Of three cases operated on by tenotomy and advancement, in two the eyes were straightened but no outward movement occurred. In the other case the muscle which was being held in the forceps was felt to contract, and there was a slight return of outward movement later. In one unilateral case with extreme convergence, good movement was obtained by operation.

DR. BERNARD CHAVASSE, in an exhaustive review of the subject, asked members to pool their experience, poor as well as good. One lesson he had learned was the extreme importance of careful diagnosis. He dealt with 29 cases of unusual forms of squint, demonstrating by means of slides the particular treatment employed. There was, he said, a good deal of similarity between cases of congenital abducens palsy and those of so-called essential alternating convergence due to a total absence of the fusion faculty. In cases in which the abducens palsy was very slight much could be done by superimposing ordinary concomitant convergence. In young children benefit followed rotation of the head away from the paretic abducens, at the same time stimulating conjugate deviation. He spoke of fusion and the stereopsis found in alternating squinters.

Mr. W. H. MCMULLEN said that in most forms of congenital paretic strabismus the best results were obtained by tenotomy or recession of the chief opponent to the affected muscle, in some cases with advancement of the weak muscle. Where the oblique muscles were concerned it was impossible to alter the position of attachment of the tendons to the globe. For paresis of the superior oblique three methods of operation merited consideration. The first was division of the inferior oblique of the same side close to its point of origin. Doyne, in 1926, reported two cases of ocular torticollis in which he had done this, with marked improvement in one, little or none in the other. Temple Smith recommended not merely division of the muscle, but excision of a portion, and he claimed excellent results in torticollis. Mr. McMullen had not attempted it, chiefly because of the impracticability of controlling the result. The second method was displacement of the insertion of the tendon of the superior rectus of the same side. In 1903 Jackson described an operation for outward and backward displacement of the insertion in order to increase the power of intorsion of the muscle, while lessening its power of superduction. Years ago Mr. McMullen did this operation on a boy who had marked torticollis, but the result did not satisfy him, though the mother expressed her pleasure at it. The third method was tenotomy and recession of the inferior rectus of the opposite side, favoured by most writers on the subject. The setting back of this tendon compensated fairly well for the weakness of the superior oblique on the other side. It was possible to combine this operation with an advancement of the superior rectus, the result of which could be controlled.

Sir RICHARD CRUISE spoke of six cases of unusual type which he had dealt with, and in which the results had lasted 20 to 30 years. One case he saw in 1910 on account of long-standing hyperphoria of high degree; as refraction was normal he did not operate, but the patient returned in 1913 begging

that something might be done. Accordingly he performed tenotomy of the superior rectus and put in a retention suture. A month later there was an excellent cosmetic result, but the trouble did not end. A prism stereoscope was supplied and exercises given for fusion, as there was cyclophoria. A few days ago he had seen this patient who was practically cured and quite happy. Another case was one of divergent strabismus of 16 years' standing. There was no attempt at fusion before operation in 1918. A slight operation with fusion exercises restored binocular vision, and she had remained happy. He concluded by paying a warm tribute to the work of Claude Worth in this domain.

Mr. HUMPHRY NEAME reported a case of upgoing eye in adduction in a girl 4 years of age, in whom the difficulty improved almost to disappearance in a few years, so that it was hoped it would eventually go entirely without treatment beyond the correction of the error of refraction. He also spoke of the case of a girl aged 22 who had a history of squint dating from infancy. At 3 years of age an operation was done on the eye, the nature of which was not known. Last year when seen she had a right convergence of 10°, which was concomitant, and the right eye went upwards 20°; the upward deviation increased when she looked to the right. With this eye vision was restricted to finger counting at 2 ft.; the vision of the left eye was 6/6. In December he did a right tenotomy of the superior rectus, and in January a right advancement of the inferior rectus. After the second operation, instead of being 20° up in the middle position looking forward, there was 10° in the right eye, with 5° convergence. In March he did an advancement of the right inferior rectus and a recession of the internal rectus. Recent photographs showed great improvement. He had had other similar cases.

Mr. F. A. WILLIAMSON-NOBLE related a series of cases of unusual squint, among which was that of a woman aged 24, whose refraction was practically emmetropic. He decided to do a recession of the inferior rectus, putting the muscle back 2 mm. Three weeks later, when she looked straight ahead, with the Maddox rod she was practically orthophoric, and in that state she had since remained. Another case was a man aged 56 with paralytic squint, following a fracture of the base of the skull. The condition had lasted 15 years, and although the external rectus seemed to be the only paralysed muscle, such marked secondary contraction had occurred in the internal rectus that the eye was drawn in towards the canthus, and was useless for purposes of vision. Operation was not urged; an eye was painted on the back of his glass.

Dr. GEORGE YOUNG (Colchester) reported a case of extreme vertical imbalance in a woman aged 44, whose complaint was of lacrymation and left frontal headaches. No organic changes were detectable in the fundi, but the left optic nerve was less developed than the right. She had considerable left hypophoria. He prescribed constant bi-focal correction, but a few months later serious discomfort was reported, with lacrymation and photophobia, and occasional diplopia while in the street. Many other measures were tried, and eventually the eye was excised, after tenotomy had failed. It was found that the diplopia was produced by the subsequent formation of fibrous bands, which frustrated the initial good result of the tenotomy. She remained greatly benefited by the enucleation.

Mr. P. G. DOYNE agreed that slight cases of ocular torticollis were not uncommon, and for them no treatment should be precipitately attempted. But in some cases the deformity was so marked that secondary postural deformities arose, and it was necessary to do something operative. In his own hands tenotomy of the inferior oblique had been, on the whole, satisfactory. It was important that these cases should be recognised outside ophthalmic circles, so that appropriate control could be given from the beginning.

Mr. LEWIS SAVIN spoke of his treatment of eight cases of paralytic strabismus by operation. Before operating he required assurance that: (1) the diplopia was so troublesome that the eye was kept covered; (2) it had persisted a long time without improvement; (3) a neurologist had advised that no further improvement was to be expected; (4) the patient was told the operation was only palliative. He had found patients grateful for what seemed objectively only small improvement.

Mr. D. V. GIRI and Mr. M. HEPBURN also described unusual cases of squint on which they had operated.

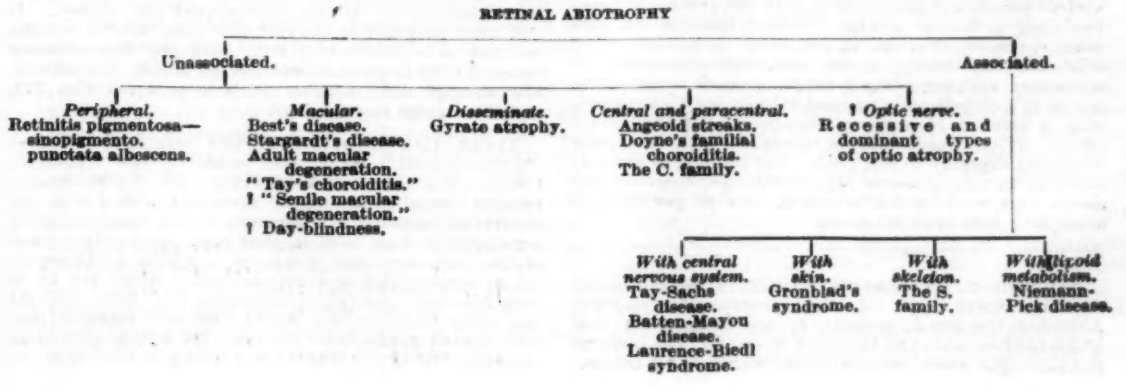
Among the many individual papers read at the congress only a few lend themselves to brief abstract.

PULMONARY EMBOLISM FOLLOWING OPHTHALMIC OPERATIONS

Mr. E. WOLFF suggested that there were many more cases than the literature would leave one to suppose. He discussed current theories on the causation of pulmonary embolism generally, and concluded that the operation on the eye per se has probably nothing to do with it. Finally he described a case which he thought might help to throw some light on causation.

RETINAL ABIOTROPHY

Mr. A. SORSBY began with Paget's conception of "premature degenerations . . . diseases only in consideration



of the time of their occurrence" (1853), and Gowers's definition of abiotrophy (1902). He compared the modern application of terms dystrophy and abiotrophy, hereditary ocular degenerations of Treacher Collins (1919–20), "ophthalmic abiotrophies" with Leber's concept of tapeto-retinal degeneration (1916). He then attempted a classification of his own (see Chart).

ATROPINE IRRITATION AND ITS PREVENTION

Mr. R. G. WALLER discussed atropine irritation from the clinical point of view. Sensitivity to atropine presents certain aspects not unlike the phenomena known as allergic. So far as is known there can be no true allergy in connexion with a pure alkaloidal salt such as atropine sulphate, since allergic phenomena are associated with proteins. The possibility of a chemical or physical combination between atropine sulphate and the proteins of tears was suggested, with a rational line of therapy based on this assumption. A technique was described for the preparation of a solution of the alkaloid in human tears with a view to obtaining an alkaloid-protein combination to be used as a desensitising agent, and an account given of the therapeutic effects obtained in a series of 30 cases.

CALCIUM AND PARATHYROID THERAPY IN PROGRESSIVE MYOPIA

Mr. F. W. LAW set out the results of this treatment in a group of 27 myopes, between the ages of 6 and 14 years, discovered amongst 1300 sent for refraction to a municipal clinic. They were all proved to be progressive by observation for at least 12 months before treatment was begun, and no conclusion was drawn until 9 to 12 months of treatment had been given. The cases were divided into five categories. The majority of cases responded favourably: of 17 who satisfied all the conditions 13 showed definite benefit, and the use of the drugs should be given a prolonged trial in cases of this serious disease.

REPRESENTATION OF THE RETINA IN THE GENICULATE BODY

Mr. G. PENMAN gave the evidence, derived partly from animal experiments and partly from observations on pathological conditions in human beings, of the representations of the areas of the retina in the lateral geniculate body. This geniculate body is arranged in laminæ of cells, in which the optic nerve-fibres terminate, those from the same and from the opposite side going to different laminæ. The macular area is more restricted than previous observations have suggested, and is represented by a median sector which is definitely limited to the caudal two-thirds of the nucleus. It involves all the cell laminæ. Fibres from the nasal half of the macula undergo complete decussation in the chiasma, while those from the temporal half remain uncrossed. The whole width of the cell laminæ in the oral third of the nucleus is concerned with peripheral vision. The upper part of the retina is represented in the medial portion of the nucleus, the lower in the lateral portion, as stated by Brouwer and Zeeman.

HETEROPHORIA IN AVIATION

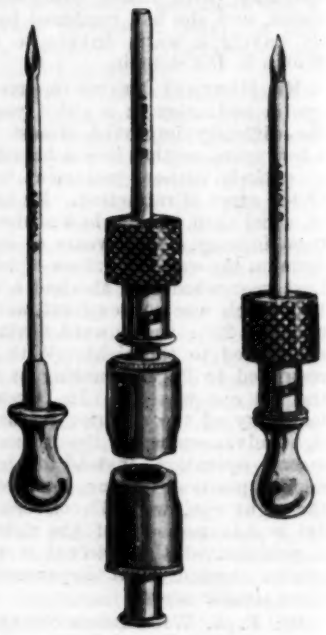
Squadron-Leader P. G. LIVINGSTON spoke of the importance of visual judgment in modern flying. The manœuvring speed of aircraft is increasing year by year, and though the landing speed is kept within certain limits by various mechanical devices, it is, with the passage of time, becoming definitely greater. Heterophoria is an outstanding cause of errors of judgment in landing. The condition may develop in the borderline cases admitted while they are undergoing flying training, or it may come about as a complication of head injuries with concussion, with a marked convergence weakness as is commonly shown. It may result from the effects of illness, or through continued exposure to sun glare. The training of cases so suffering by amblyoscopic and stereoscopic exercises has shown that, with care in selection, over 90 per cent. of cures have been brought about.

ALDERSHOT MATERNITY UNIT.—Lady Isobel Gathorne-Hardy, wife of the general officer-in-chief, Aldershot Command, recently opened a maternity unit which has been added to Aldershot Hospital. The building includes eight wards, several private wards, and a creche.

NEW INVENTIONS

A TROCAR AND CANNULA FOR THE INJECTION TREATMENT OF HYDROCELE

THERE are numerous types of trocar and cannula used for tapping hydroceles, but the one which I have had specially adapted for my own use has proved both practical and satisfactory. It consists of a trocar and cannula, made in two sizes (the large size equal to a 10 S.W. gauge, and the small size equal to a 12 S.W. gauge), and a rubber connexion piece with special bayonet fitting mount. The trocar and cannula is introduced into the hydrocele sac, and the finger-piece is firmly grasped between the thumb and index-finger of the left hand. The trocar is then withdrawn. After all the fluid in the hydrocele sac has been evacuated a 10 c.cm. syringe is charged with a suitable solution and attached to the cannula by means of the rubber connexion. This connecting piece allows of a certain amount of flexibility in the manipulation of the syringe during the process of injection. At the completion of the injection the cannula is removed and the parts are massaged.



The trocar and cannula is made for me by Arnold and Sons (John Bell and Croyden), 52, Wigmore-street, London, W.

RODNEY MAINGOT, F.R.C.S. Eng.

ABERDEEN ROYAL INFIRMARY.—The total cost of the new infirmary being built at Foresterhill is now estimated at £484,000, and since the building fund falls short of this amount by £72,000, it has been decided to reopen the appeal for money. It had been intended to provide 580 beds, but the number has had to be reduced to 500. Last year the infirmary received 6709 in-patients and treated 25,000 out-patients. The average daily number of beds occupied was 379, and the average stay 21 days.

ADULT CONVALESCENT HOMES FOR LIVERPOOL.—At the annual meeting last week of the Children's Convalescent Home at West Kirby, Dr. W. M. Frazer, medical officer of health for Liverpool, stated that the matter of convalescent accommodation had not been satisfactorily dealt with in that city. Seeing that most of the voluntary and municipal hospitals in Liverpool are in overcrowded and built-up areas, where the air is unsatisfactory, and where comparatively little sunlight can enter most of the rooms, he was satisfied that convalescent homes were desirable for adults as well as children.

REVIEWS AND NOTICES OF BOOKS

Obstetrics and Gynecology

Edited by ARTHUR HALE CURTIS, M.D., Professor and Head of the Department of Obstetrics and Gynecology, Northwestern University Medical School. London and Philadelphia: W. B. Saunders Co. Ltd. 1933. Vols. II. and III. Pp. 1135 and 1201. In complete sets of 3 vols., £8 5s.

THE completion of this fine compilation on obstetrics and gynæcology will be welcomed by those who studied the first of the three volumes, reviewed in our columns in September last. That volume dealt with history, anatomy, embryology, physiology, normal pregnancy, and labour, and made a start in the consideration of pathological conditions in pregnancy. Though the clinical chapters reached a standard rather less high than those on morphology and physiology, which were of outstanding merit, the reader was left with a keen desire to possess the two succeeding volumes.

These have now appeared and deal with the pathology of labour and the puerperium, and with gynæcology. The selection of a large number of authors, each writing on a small section of the subject, is, as we anticipated, more successful in the section of the work allocated to gynæcology, which lends itself to this treatment better than does obstetrics. Many men of world-wide repute are among the authors, and the chapters on endocrinology seem to us the most important and valuable feature of the whole work; Edgar Allen writes on theelin, G. W. Corner on the corpus luteum, P. E. Smith and E. T. Engle on the anterior pituitary secretion, and Emil Novak correlates the scientific work with clinical conditions in chapters on gynæcological endocrinology, uterine hæmorrhage, amenorrhœa, and the menopause. These chapters give much important information which is not to be found in the ordinary general text-book. The subjects of clinical gynæcology are also dealt with thoroughly and efficiently, and the long list of references to the literature at the end of each chapter serves the needs of students who wish to consult the original papers on the subject. The section on sterility by I. C. Rubin, and those on roentgenography by James T. Case, and on radiotherapy by Curtis F. Burnam, are worthy of special mention. There is a little overlapping in places: for example, illustrations of reconstruction of the urethra appear in the chapter on prolapse as well as in that on fistula. The chapter on prolapse is not good; it gives little description of the condition, and is mainly devoted to operations for its cure, though the work of Donald and Fothergill is ignored. In the chapter on blood transfusion space is wasted by the inclusion of detailed description of cases of non-gynæcological conditions treated by this method, some of them being males.

Obstetric operations are described by a number of authors. In our view there was no need for a separate chapter on episiotomy, which does not even mention lateral episiotomy, preferred by many to the central incision. The chapter on puerperal sepsis, by B. P. Watson, gives an excellent account of the pathology and treatment. In some other conditions, such as accidental hæmorrhage and contraction ring, the descriptions of the pathology are inadequate for a book of this size. The methods of treatment recommended are sometimes not in accord with English practice; for instance, uterine drainage and injection of glycerin for sepsis are condemned.

The book is well illustrated, both from the pathological and operative standpoints, with numerous photographs and diagrams. Each volume has an index and a separate index covers the whole work. Altogether a worthy production.

The Science of Radiology

Edited by OTTO GLASSER, Ph.D., Cleveland Clinic Foundation. London: Baillière, Tindall and Cox. 1933. Pp. 450. 25s.

THIS interesting volume has been produced in connexion with a successful radiological congress held at Chicago during the Fair of 1933, in which the five main American radiological societies collaborated.

Dr. Otto Glasser, whose "Life of Roentgen" was recently reviewed in these columns, acted as editor, and has contributed authoritative chapters on Roentgen and the Curies and their discoveries. The remaining 23 chapters by different experts cover the whole field of radiology. All, within the very circumscribed limits, are good. Practically every phase of radiology is dealt with—technique, dosimetry, diagnosis, physics, biological effects. X ray cinematography is apparently destined to play a large part in the scientific investigations of biological problems, and the author of this section, H. A. Jarre, has summarised well the attempts made to solve the technical problems concerned. The section on the teaching of radiology, by J. T. Case, is well worth study. G. M. MacKnee deals with cutaneous X ray and radium therapy. We would commend this section to those who have been so engrossed in investigating the effects of radiation on malignant disease that they are inclined to overlook the considerable field of usefulness for these rays in non-malignant conditions, and more particularly in dermatology. Those who are interested in the borderlands of radiological work will find satisfactory chapters on ultra-violet and infra-red radiations, cosmic rays, and Gurwitch rays.

This book provides a worthy memento of a successful congress.

Four and a Half Years

A Personal Diary from June, 1914, to January, 1919. By the Rt. Hon. CHRISTOPHER ADDISON, P.C., M.D., F.R.C.S. Vol. II. (1917–19). London: Hutchinson and Co. 1934. Pp. 629. 18s.

THE first volume of Dr. Addison's record of the war years was reviewed here on its appearance at the beginning of the year. The second volume is now issued and completes the author's personal story of the most critical period of our national history, during which the diarist was in succession head of two great bureaux, the Ministry of Munitions and the Ministry of Reconstruction. The story ends with the significant episode of the dissolution of the Local Government Board when Dr. Addison was appointed the first Minister of Health.

This volume is not easy reading, and how should it be, as it contains the description of the formation and activities of the main Government departments while the fortunes of the country fluctuated during the last 18 months of the war? The interplay of events and personalities is extremely difficult to follow and, from the medical point of view purely, it is not worth

following. Dr. Addison deals with the reactions of various important public men to proposed official changes, to methods for making increasingly effective designs both of offence and defence, and to general plans for reconstruction at the end of the struggle. Such chapters as those which set out the emergency problems at home, the complications of the Irish question, the preparations for demobilisation, journalistic interventions and election machinery have no special medical message except what may be extracted from their psychological interest, and this is of a somewhat painful character in view of certain revelations or allegations. It is an unfortunate fact that Dr. Addison should have received not infrequently unfavourable impressions of the work of some of his colleagues. In the references to food control it is curious that little or nothing should be said conspicuously about the influence which the scarcity of food had on public health, but for Lord Rhondda's courage and energy Dr. Addison has frank words of praise.

Dr. Addison's two large and detailed volumes—and the details are indeed voluminous—do not form a war diary, but they give an inside view of the conduct of material affairs during the war period. As such they afford valuable information, and if little or none of it is of close medical interest, it must be recalled that the years of the narrative correspond with a break in the author's direct work in medical fields. The entries cease just before Dr. Addison's appointment as first Minister of Health, an appointment which may be regarded as consequent upon his pre-war activities, which, in connexion with the National Insurance Act, had been of first-class medical importance.

Red Medicine

Socialised Health in Soviet Russia. By Sir ARTHUR NEWSHOLME, K.C.B., M.D., and JOHN ADAMS KINGSBURY, LL.D. London: William Heinemann (Medical Books) Ltd. 1934. Pp. 324. 10*s.* 6*d.*

THIS book was noticed at some length in THE LANCET by an American correspondent at the time of its recent issue in the United States. It is a responsible account of Russian public health administration under the Soviet Government, and its message is to suggest that Soviet ideas are providing medical and hygienic service in accordance with the socialistic views of the Government. The book is now published in England and will interest all students of sociology and workers in public health and welfare directions.

Introduction to the Vertebrates

By LEVERETT ALLEN ADAMS, Assistant Professor of Zoology, University of Illinois. New York: John Wiley and Sons Inc.; London: Chapman and Hall Ltd. 1933. Pp. 414. 21*s.* 6*d.*

THIS book, divided into three parts, deals first with the characteristics, phylogeny, and classification of the chordates, including fossil forms. Nearly fifty illustrations of representative types serve to make the classification something more than a long list of names. In the second part the five main divisions—i.e., fishes, amphibians, reptiles, birds, and mammals—are described anatomically with a view to giving the reader an outline of the morphology of the types, very little detail being supplied. In the third section the various tissues—e.g., the integument, the skeleton, the muscles—are discussed in considerable detail, typical examples of the various classes being compared in order to emphasise evolutionary development. This method of treating the subject has considerable advantage in that the student can either skim over it or delve deeply; it carries the risk, however, that the knowledge acquired will be rather disjointed. Numerous illustrations are included in which essential features are emphasised and artistic detail is omitted.

To anyone wishing to study the vertebrate without any previous knowledge of biology this book may be recommended.

Pharmacopœias and Formularies

A Compendium of the Pharmacopœias and Formularies (Official and Unofficial), with Practical Aids to Prescribing and Dispensing. Seventh edition. By C. J. S. THOMPSON, M.B.E., Hon. Curator, Historical Section, Royal College of Surgeons of England. London: John Bale, Sons and Danielsson Ltd. 1933. Pp. 381. 10*s.* 6*d.*

THE title of this work gives a fair idea of its scope. It contains a list of official and unofficial modern remedies with their solubilities, properties, and doses; synopses of the British and foreign pharmacopœias; useful formulæ selected from the B.P.C., hospital pharmacopœias, formularies, and other sources; stock mixtures, preparations for the feet, nasopharynx, and the toilet; notes on invalid foods, antiseptic dressings, the treatment of burns, and on medicated baths; and memoranda on bacteriological work in relation to medicine—on urine and milk analysis, and on sterilisation. Information is also given regarding the Poisons and Pharmacy Act, the Dangerous Drug Regulations, incompatibilities, and antidotes to various poisons. There are included an index of diseases and the various remedies which have been employed in them; and numerous tables, one giving the doses of the commoner drugs used for animals in veterinary practice. The work has been brought up to date, and should continue to prove a handy book of reference for the busy practitioner.

Lord Lister

By C. J. S. THOMPSON, M.B.E. London: John Bale, Sons and Danielsson Ltd. 1934. Pp. 96. 5*s.*

THIS short book has been written to supply general readers and students with a brief account of the career of the founder of aseptic surgery. We have details of his life as a student at University College Hospital and as an interne at the Royal Infirmary, Edinburgh; sketches of surgery before the antiseptic era; and an interesting account of how Lister's previous work led up to surmises and convictions, experiments and success. The sketch closes with an estimate of Lister as a benefactor to humanity. As hon. curator of the historical collection in the museum of the Royal College of Surgeons of England, Mr. Thompson was in a happy situation for adding, as an appendix, a guide to the collection at the College of relics, instruments, documents, and manuscripts relating to Lister. The author acknowledges his indebtedness to Sir Rickman Godlee's well-known biography, and has been happily inspired in his desire to make Lister's story available in this brief form.

ERRATUM.—In a review published in our issue of April 7th, p. 740, Mr. Alan Macey was incorrectly described as "M.D." We regret the mistake.

THE LANCET

LONDON: SATURDAY, APRIL 21, 1934

RESISTANCE TO STREPTOCOCCAL FIBRINOLYSIS IN RHEUMATIC CHILDREN

IT is not yet generally known outside laboratory circles that a new property has recently been demonstrated in pyogenic streptococci which may have an important bearing on their activities within the body. This is the formation of a substance which liquefies fibrin, and it is not difficult to picture the contribution which the activity of such a substance may make to the rapid extension of acute streptococcal lesions. Although the solution of fibrin by streptococci was first observed some years ago in slide cell plasma cultures at St. Mary's Hospital by R. M. FRY, the significance of this change was not then appreciated, and it has been left to W. S. TILLETT and R. L. GARNER,[1] working at the Johns Hopkins Hospital, to study the phenomenon in detail. The main facts established by these authors are that coagulated human plasma is liquefied, usually within a few minutes, by cultures of *Streptococcus pyogenes* from a variety of human sources, or by filtrates of such cultures; on the other hand, streptococci of animal origin are usually incapable of inducing this change, and animal fibrin is resistant to it. No other bacterial species has been found capable of this fibrinolysis; it is an effect which, as far as we know, is confined to streptococci of human origin acting on human fibrin. A further observation of great importance, recently investigated by TILLETT, EDWARDS, and GARNER,[2] is that recovery from acute streptococcal infections, exemplified by scarlet fever, tonsillitis, otitis media, and sinusitis, is accompanied by the development of resistance to fibrinolysis, the patient's coagulated plasma remaining solid for hours, or throughout the maximum period of the test, in the presence of a streptococcus culture which lyses normal plasma clot within a few minutes. The development and subsequent decline of this resistance was studied by repeated examination of the blood, and shown to be a specific change by the negative results of similar observations in cases of non-streptococcal disease. Since recovered case serum confers resistance to lysis on normal plasma, it may be assumed that the property of resistance is due to the formation of an antibody.

We print on p. 834 of our present issue an article by Prof. GEOFFREY HADFIELD and his co-workers, in which these observations are confirmed and extended in new directions. The first of these concerns variation in the fibrinolytic power of streptococci and its relation to their other characters. Such variation was considerable, and suggested subdivision of the strains studied into three groups, according to the time required for fibrinolysis under standard conditions. This grouping corresponded broadly to the degree of severity of the infections from which they were derived, and to the degree of virulence for mice, rapid fibrinolysis being an attribute of the more virulent strains. It was found further that these strains formed colonies of rough or matt appearance, whereas smooth (glossy) strains were weakly fibrinolytic; degradation of matt strains after repeated subculture to the glossy type was accompanied by partial loss of fibrinolytic power. It appears, therefore, that capacity for fibrinolysis goes hand in hand with virulence and "roughness." The further studies reported in this paper concern the nature of resistance to fibrinolysis, and include what appears to be a conclusive demonstration that this resistance is developed by patients suffering from rheumatic fever. It will be remembered that E. W. TODD demonstrated[3] the presence in the blood in this disease of an antibody which neutralises the hæmolysin of the streptococcus, an antibody which also appears after acute infection known to be streptococcal, and is present only in smaller amounts in the blood of unaffected subjects. This observation has since been repeatedly confirmed, and is perhaps the strongest evidence we have in favour of the streptococcal origin of acute rheumatism. What Prof. HADFIELD and his colleagues at Bristol have done is the equivalent of TODD's work in the new field of fibrinolysis, and it must be granted the same significance. This method may prove a useful new weapon with which to attack the unsolved problems of acute rheumatism. Of the study of the action of streptococcal products on fibrin, both as an in-vitro phenomenon and as it concerns the progress of natural infection, and of antifibrinolysin, the name by which the newly discovered antibody will presumably have to be known, we shall no doubt hear much more before long.

What may appear in this connexion a somewhat confusing observation has also been made by TILLETT and GARNER[4]—namely, that certain strains of streptococci are highly agglutinable by normal plasma, the active element in the latter being either its fibrinogen (chemically isolated fibrinogen exerting the same effect) or a protein closely related to it. This observation is of some interest as illustrating a form of entirely non-specific agglutination, but since the substance responsible may apparently be formed in excess in the early stages of acute infections of many kinds, and is also present in the separated serum, it affords a warning against too ready acceptance of agglutination tests as evidence of streptococcal activity in any acute febrile state.

SPECTACLES OF CRUELTY

DOUBTS on the propriety of public exhibitions involving physical suffering have of late been given considerable prominence in Parliament and elsewhere. Films showing fatal accidents, both by car and aeroplane, admittedly indicate a triumph of modern enterprise and technique, but their display

[1] Jour. of Exper. Med., 1933, lviii., 485.
[2] Jour. Clin. Invest., 1934, xiii., 47.
[3] Brit. Jour. Exper. Path., 1932, xiii., 248.
[4] Bull. Johns Hopkins Hosp., March, 1934, p. 145.

to the general public offends people whose sentiments—perhaps old-fashioned—make them abhor the thrill associated with such sights, though the exhibitors of the films may rely upon just that thrill as a popularising element. Apart from the matter of cultivation of taste—which in any event tends to vary from generation to generation—it is difficult to specify what harm could result from such a show, except possible damage to nervous people by stimulating unpleasant ideas or by exacerbating symptoms. The acceptance of an arbitrary standard of good taste as a criterion of censorship might be really only a concession to squeamishness or taboo, both of them potent factors in the production of unhealthy reactions. But other than good taste is often involved; as, for example, in some pretended jungle films portraying animal fights to the death, in which there is more than a suspicion that the fight is a staged episode that would never occur naturally. Two fresh considerations arise here: first, the infliction of pain and terror, the objection to which rests upon something more absolute than good taste and yet, like that, is dependent rather upon emotion than argument, the final sanction for its prevention being that the deliberate infliction of suffering upon animals is repugnant to most of us; secondly, there is the danger of stimulating tendencies to cruelty—a very real danger. The word sadism has passed into our common speech; the existence and nature of that aberration is generally if only partially recognised, and it is noteworthy that little official censorship is exercised over publicity that directly appeals to it. Censorship over details of normal sexual behaviour is still exercised and is occasionally defended by the assumption—not often specifically formulated—that their publication would lead susceptible readers to embark precipitately upon action that, whilst within the limits of the biological norm, would be socially undesirable. That harmful sadistic behaviour may be stimulated, or that sexual impulses of a sadistic nature may find gratification, by details or actual exhibitions of cruelty, is well known to psychopathologists who, if given the power, might exercise a censorship in unexpected directions.

There is, we are told, a sadistic component in all of us. Indeed, an excessive reaction against cruelty is, with the usual contrariness of psychoanalytical theory, ascribed to over-compensation of that component. Differences of opinion with regard to the necessity of war depend fundamentally upon differences with regard to the possibility of directing this element of human nature. The satisfaction of the aggressive impulse is provided for in our social organisation with the purpose, generally undefined but nevertheless present, of turning it to desirable or at least harmless ends. Not as a matter of good taste but as a matter of policy it is surely proper to seek to prevent exhibitions that may foster the tendency to cruelty that exists, overt or latent, in mankind. We therefore support the protests being made in Parliament against the proposed repetition of the rodeo exhibition in this country. This involves obvious cruelty to beasts which, being stabled, are pitiful substitutes for the semi-wild cattle whose handling may call for such methods; and here it should be mentioned that in the cattle country of Australia such methods are unknown, though exhibitions of drafting and cutting-out cattle are attractive additions at country shows. Cruelty to the bucking horses is not so obvious to the spectator as are the broken legs and horns of the cattle, but whereas the successful conquest of a genuine buck-jumper is a performance that legitimately satisfies the aggressive tendencies of performer and onlooker, it is common knowledge to Australian bushmen that no stabled horse retains the habit, which can be reproduced only by the use of severely painful measures. The association of cruelty with rodeo performances is undoubted. Some spectators may obtain satisfaction for their sadistic trends from the thrill they experience in watching them. Let us hope at least that, if the performance is after all permitted, the ultimate result will be only satisfaction and not stimulation.

THE RECOGNITION OF CHIROPODY

AT a Council meeting of the British Medical Association held on April 4th an interesting debate centred around the question whether chiropodists, approved in accordance with a clearly defined range of duties, should be accorded a measure of professional recognition. Chiropodists possess an official representative body, and the desire for recognition emanated from them, while already there is at least one hospital in London, known simply as the Foot Hospital, where cases are under treatment which conform to the definition, popular or scientific, of chiropody. On the question of professional recognition arising, inquiry was made by the British Medical Association of the Incorporated Society of Chiropodists with the result that the following definition of chiropody was mutually agreed upon: "Chiropody means the treatment of abnormal nails, and all superficial excrescences occurring on the feet, such as corns, warts, callosities, and bunions." It was further agreed that not even within that field should chiropodists operate for deformities, or treat any condition either involving tissues below the skin level or requiring general or local anæsthetics. Subject to the definition and the reservations the Ethical Committee of the B.M.A., to which body the questions were referred, reported in favour of recognition.

DR. LANGDON-DOWN, in proposing the acceptance of this report by the Council, pointed to the modern developments in the field of chiropody, to the rise of institutional treatment, and to the fact that the sphere of therapeutic action under discussion had been left vacant in medical practice. It must be remembered that no discussion of the proposed field of work could take place in the Council, as definition of chiropody and the limitations of its scope had already been agreed upon between the B.M.A. and the representative body of the chiropodists. On that agreement the report had been framed, so that the obvious difficulties of including such a complaint as a bunion inside the domain of dermatology could not be discussed;

the Council were asked to register an opinion on the general situation as set out by the report. The measure of recognition suggested in the document was definitely objected to by certain members of the Council on the ground that no person who had not passed through a medical curriculum could be held as competent to diagnose and treat disease; and as the main significance of the Medical Act lies in the provision to the public of knowledge whether a practitioner has passed the necessary educational tests for registration, the objection was obviously forceful. But the old difficulty remained for consideration as to how far therapeutic procedures ancillary to professional medical treatment can be regularised, seeing that these procedures are, if properly guarded, of obvious public utility. Sir HENRY BRACKENBURY, speaking from the chair, set out the position, as he saw it, succinctly. What was he to do, he asked, if a person came to him with a bunion which he did not care to treat? He considered it common sense that such sufferers should go to the chiropodist, and as the chiropodists possessed a representative body with which certain well-known surgeons were associated, it was reasonable that they should receive the measure of recognition asked for.

The crux of the situation must have seemed to the Council to be the fact that support was already afforded to organised chiropody by the medical profession, for the Council agreed by 16 votes to 12 to recommend to the Representative Body that the defined measure of recognition should be given to the chiropodists, a decision being also reached, by 17 votes to 8, to refer back to the framers of the report a recommendation to include within the National Register the names of members of approved organisations who practise chiropody.

THE BUDGET

THE past year, and especially the past few months, has seen a better understanding of poverty and a greater sympathy with the poor. More and more people have come to realise that unemployment is no crime—that nowadays the means of livelihood are distributed less according to merit than according to the wayward working of economic machinery which has partially broken down. Authoritative reports on housing and feeding have worked on the public mind in such a way that there will be a widespread feeling of relief that Mr. CHAMBERLAIN'S Budget has first of all restored to the unemployed the full rate of benefit reduced in 1931. Much of the bitterness of discussions on the Unemployment Bill could have been avoided if this concession had been announced as soon as last year's surplus became certain; and the scale, with its continuing 2*s*. for each child, remains inadequate for maintenance over long periods. But the change, which comes into force in July, will allow the new Unemployment Assistance Board to adopt a more generous policy than would otherwise be possible, and it may have the indirect effect of raising wages of the lowest grades.

As to the salary cuts of 1931, inflicted on members of military and civil forces, judges, doctors, and teachers, they have all of them given rise to irritation; some indeed may be said to have led to something like blood-poisoning. The fact that, among the sufferers, panel practitioners have complained comparatively little does not mean that they will by any means despise the half-cure wrought by the Chancellor's return of 5 per cent. of the insurance capitation fee. They will also benefit with other taxpayers by the 6*d*. reduction in the standard rate of income tax. Most members of the medical profession would probably have gained a good deal more by restoration of the old allowances permissible on small incomes, but the Chancellor regards the subtraction of 6*d*. from the standard as much more likely to stimulate trade. Apart from a somewhat surprising gift to the motor industry, this is indeed his chief contribution to industrial recovery; for he has decided to use the whole of last year's surplus—bought at no little cost—for repayment of the National Debt, and on the basis of this year's taxation he calculates that he will have only about £29,000,000 to devote to increase of expenditure or relief of the taxpayer. This cautious estimate explains why the Budget offers no provision for such projects as the raising of the school age, the distribution of milk to all school-children, or the encouragement of surveys and research—not to speak of large public undertakings or loans for reconstruction in the derelict areas. Mr. CHAMBERLAIN, conscious of heavy responsibilities, defers such expenditure until such time as it can be met from income, and meanwhile continues his example of economy; he holds, with show of reason, that the tonic effect of his surplus has been worth the privations that brought it into existence, and he evidently hopes to repeat the prescription next spring. In times of uncertainty such as the present, this point of view is incompatible with the use of the Budget as an instrument of national development, and those who are urgent for new plans for a new society will find little in its favour. It has, nevertheless, the merit of expectedness. The Government have been consistent in their anxiety to restore financial confidence and in their condemnation of financial experiments, and by giving full expression to this policy the present Budget provides something to please everybody. Supporters will find no fault with its evident soundness; the public will be thankful for its reliefs; and opponents will feel an inverted satisfaction, because it leaves them with nearly all their major criticisms of the Administration unimpaired.

SOVIET INSTITUTE OF EXPERIMENTAL MEDICINE.—A branch of the All-Union Institute of Experimental Medicine has been established in Moscow, its members including Profs. Rozenkov (director of the branch), P. P. Lazarev, Propper (assistant director), Krol, Levit, Konchalovsky, and Shaternikov. Its work will deal with human physiology and pathology, and special attention will be paid to the connexion between the higher nervous activities and the functions of sense organs. Laboratories for studying industrial physiology have been provided, and climatic stations have been opened in Yalta, Murmansk, Prozorovka (near Moscow), and Ashkabad.

ANNOTATIONS

POISON-GAS FROM THE AIR

WHATEVER else remains undone, there need be no doubt that the possibility of improving the administration of poison-gas is being studied. Medical journals abroad lay increasing emphasis on the desirability of practitioners familiarising themselves with the methods of chemical warfare, and there is nowadays a wealth of information about the various agents and their use. It appears to be generally thought that these do not as yet include any that differ essentially from those employed in the late war. These accepted forms of poison may be divided into (1) lacrymatory gases, chiefly used by non-military forces during civil commotion (white cross group); (2) lung poisons such as chlorine and phosgene (green cross); (3) arsenical smokes ("mask removers" or blue cross); and (4) vesicants such as mustard gas (dichlorethyl sulphide) and lewisite (yellow cross). A grim mnemonic of the Germans suggests a way of remembering the different effects of these groups.[1]

> White cross reddens the whites of the eyes.
> Green cross turns the lungs a putrid green.
> Blue cross makes the nose blueish red.
> Yellow cross turns the skin pale yellow.

The green cross group can be neutralised by efficient chemical respirators and the arsenical smokes by mechanical respirators. As far as aerial attack is concerned it is the yellow cross or vesicants which are much the greatest danger since they are liquids which could be dropped from the air either as a rain or in bombs and which volatilise into a heavy vapour which might "drown" a town or area for some days. Masks are essential for protection from the vapour and special protective clothing is necessary against the spray of liquid. The essence of treatment is to remove all traces of the liquid from the patient's skin and clothing while protecting his eyes and air-passages from the vapour. Speed and early treatment are very important, and with these ends in view a chemical warfare treatment unit has been designed by Captain F. A. Wells of the medical department of the United States Army.[2] Two technicians of the Medical Corps, wearing impregnated clothing and head-pieces, gas masks, and rubber gloves, strip the patient (who must himself wear a mask) and scrub him with hand brushes irrigated with soda bicarbonate solution running from a Lyster bag suspended from the tent pole. Other solutions which may be used are bleaching-powder, soft soap, peroxide of hydrogen, or permanganate of potash.[3] It is claimed that a "mustard" casualty can be cleansed by these methods in about two minutes. Such a result is attained, however, only with special equipment and trained personnel. Hence if it is true, as recently stated in the press, that as little as forty tons of gas would be needed to cover London with a layer of vesicant gas and that such a layer might be "canalised" by the Thames Valley and remain undispersed for five days or more, it is not impossible that the population of London could be exterminated or at any rate put out of action with comparative ease. This is, of course, disputed: there are authorities who think that such dangers are in practice small. One thing, however, is certain. A national scheme of anti-gas defence, to be effective, would have to include the provision and distribution of masks suitable for protection against any kind of gas likely to be used, and the thorough training of the public in their employment, and in other anti-gas measures. The realisation of such a scheme, with all its implications, hardly seems to be called for under present conditions. On the contrary, it would be actively objectionable, since any further spread of anti-gas drill habits must inevitably heighten the general sense of insecurity.

[1] Med. Welt, March 17th, 1934, p. 382.
[2] Milit. Surg., February, 1934, p. 76.
[3] THE LANCET, 1932, ii., 1013.

ULTRA-VIOLET RADIATION FOR ERYSIPELAS IN CHILDREN

THE fatality of erysipelas in children, especially in infants, is still uncomfortably high although it has been reduced by the prompt use of serum. Better results have however been claimed for ultra-violet radiation, and a recent paper[1] by Dr. L. M. Nightingale and Dr. S. Starr, of Brooklyn, gives grounds for this belief. They have treated 51 children under twelve in this way and of these 23 were infants under one year of age. The routine employed was to give three applications of one and a half erythema doses on successive days, regardless of the clinical course. The lamp was set at a distance of ten inches and the rays were directed over an area extending one to two inches beyond the spreading border. If the area could be exposed only from two directions, overlapping was permitted. No ill-results were seen from the radiation in the whole series. In many of the infants, early in the work, blood transfusion was also performed, but no particular benefit was observed and it was discontinued. Similarly early in the series serum was used in addition to the ultra-violet radiation for a few patients but later the latter was alone used. The results obtained were compared with those in 130 children with erysipelas treated by serum alone, by local treatment, by X rays, or by combinations of these. Some of the groups were too small to be of value for discussion, but a broad comparison with the serum-treated and the radiation-treated cases brings out certain points. Over one year of age 47 cases received serum with a total mortality of 6·4 per cent., while 28 cases received ultra-violet radiation with a total mortality of 7·1 per cent. Under one year the respective mortalities were 59·3 and 39 per cent. The authors point out, however, that death in certain instances was not due to erysipelas but to some complicating factor such as pneumonia or mastoiditis. For example, one child was admitted with erysipelas and pneumonia. Clinically the erysipelas cleared in five days but the child died four days later of the pneumonia. Correcting the mortality-rates on these lines they claim that under one year of age ultra-violet radiation treatment gave a total recovery-rate of nearly 70 per cent. as compared with just over 50 per cent. for serum treatment. For the older children 2 cases out of 47 died from erysipelas after serum treatment and 1 out of 28 after ultra-violet radiation. There was considerable difference in the length of illness in the two groups, especially for infants where the average duration was only half in the ultra-violet treated cases of what it was in those receiving serum. Where treatment was instituted early the differences both in mortality and in length of illness were even more striking, and the number of complications was in general less in the irradiated cases than in those treated by serum. Of special interest is the youngest child in the series. This was a premature infant,

[1] Jour. Amer. Med. Assoc., March 10th, p. 761.

aged 19 days and weighing only 4 lb. 13 oz., with erysipelas of the face. Ultra-violet radiation was used and the temperature was normal in three days. Six days later the baby was discharged weighing 5 lb. 2 oz. It must be remembered that the results obtained with serum represent the best that have hitherto been obtained, and some authorities put the mortality-rate for infantile erysipelas as high as 60 to 90 per cent. where local treatment alone other than radiation has been employed. The older the child whatever the treatment the better the prognosis. For infants under one year it can be said that early treatment by means of ultra-violet light will probably save four out of five cases in the absence of complications. The authors claim that this method is also the least dangerous and the least expensive.

PINK DISEASE

IT is now just 20 years since H. Swift, of Adelaide, reported to the tenth Australasian Congress at Auckland the first recorded cases of a disease of early childhood which he called erythrœdema. Many studies have since been made of what is now conveniently called pink disease. In a recent study [1] of 100 cases at the Birmingham Children's Hospital Drs. A. V. Neale and R. H. Hucknall find that the disease may begin at any time throughout the year, with a predominance in the early months of spring, the age at onset being most commonly between six and twelve months. Both sexes are equally affected, and clinically it is recognised that this disorder frequently begins in babies who are in a first-class state of physical welfare and not uncommonly during breast-feeding, the mother herself also being in a good state of health. A sudden onset is unusual; as a rule, some disturbance associated with an infection of the upper respiratory tract precedes the appearance of the syndrome. A gradual progression of irritability, restlessness, misery, perspiration, weakness, hypotonia, loss in weight, photophobia, anorexia, occasional vomiting and diarrhœa, cutaneous irritability, insomnia, and cutaneous and oral sepsis were the most common features of the history volunteered by the parents. Tachycardia appears early and the chief signs noted at the first hospital attendance were pink hands and feet, wasting, especially of the thigh muscles, hypotonia, flexion posture, photophobia, a papular skin rash, and in a few cases pyrexia; fever was absent throughout the malady in 90 per cent. These signs and symptoms gradually disappear, the tachycardia abates, appetite returns, and the swelling and pinkness of hands and feet diminish. The course is however protracted, the duration of a case of moderate severity in the present series being about 100 days. As a rule the younger the child at onset the shorter the duration. Hospital care appears to shorten the duration of the disease if superadded infection can be avoided by barrier nursing or some other refinement of hospital care. An adequate food-supply and good nursing are regarded as the most important items in treatment. The authors find the most likely cause in a microbial agent of low infectivity; until this is discovered no specific form of treatment is available. Screening from powerful light by means of a red tent helps to allay the photophobia, and a 5 per cent. menthol-vaseline ointment soothes the irritable skin. The addition of vitamins or other special food factors —e.g., liver—to the diet was not found beneficial; one of the difficulties is to secure that the child takes the food provided. Fourteen of the hundred children died in hospital, mostly of broncho-pneumonia. One object of the analysis was to determine the ultimate state of children who had suffered from pink disease in infancy. About 60 children of the series have been re-examined at periods of one to six years after recovery, and in no instance has any defect, mental or physical, been discovered. Indeed it seems to be a fact that these children when they survive the illness become remarkably strong and healthy. Whatever structural changes may be present in the nervous system during the attack, destructive damage cannot occur in view of the complete restitution to normal.

[1] Birmingham Med. Review, March, 1934, p. 5.

A BRAVE CAREER

THE death occurred on Friday, April 13th, of Dr. Charles Michael Cooke, who was parish medical officer at Barnstaple for 20 years, this being his professional record for the first half of his life. Then, some 25 years ago, and while in full practice and in the prime of life, he became totally blind. This tragic position he faced with a success which was due partly to his own courage and partly to the great sympathy of professional colleagues and a large number of friends which he had made in his official career as parish medical officer, and during his conduct of private practice. The local medical men issued an appeal on his behalf to the medical profession at large, the result of which was a fund enabling him to face the future with equanimity even if he did not fill up his time successfully by work ancillary to the medical profession. The first outcome of the appeal was to bring in over £2000, thus making safe the future of a tragically afflicted man. But the life of an idle pensioner had no appeal for him. He at once trained as a masseur, obtained the necessary certification, returned to Devonshire and went into practice as a masseur. Bideford was the centre of his activities and he was masseur to the district hospital, but he acquired an extensive connexion in the locality and was able to lead a thoroughly useful life until approaching 70 years of age, when general failure in health led to his retirement two years ago.

DETECTION OF DEAFNESS IN SCHOOL-CHILDREN

DISEASE of the middle ear is one of the most important causes of disability in this country. It is, in fact, the most frequent cause of rejection for the Army; in 1931 as many as 54 per thousand applicants were refused on account of middle-ear disease and deafness. The obvious question, whether this condition arises before, during, or after school age, led to an investigation being made by the London School of Hygiene and Tropical Medicine, the result of which is described [1] by Dr. G. P. Crowden. Tests were carried out on elementary school-children by means of the gramophone audiometer produced in England by the Western Electric Company. With this instrument a series of numbers are dictated at a regularly decreasing degree of loudness; the record is relayed to as many as 40 head-telephones, and the children write down the figures they hear on a special form; in this way it is easy to determine the degree of deafness. Each ear is tested separately, and it is possible to examine 400 children in a day. The loss of hearing is expressed in decibels or sensation-units; a loss of 9 units or more is reckoned as deafness, for it is found that a loss up to 6 units is often present with no discoverable abnormality. By this method it was found that 2·97 per cent. of ears tested of

[1] Jour. Laryng. and Otol., April, 1934, p. 247.

a total of 5216 showed a loss of 8 to 18 units, and 0·75 per cent. a loss of 21 to 30 units, but that only three children of the total 2608 examined had a loss of 21 units or over in the better ear. It is obvious that the slighter degrees of deafness, and many cases of unilateral defect, would have escaped detection without some such method of wholesale examination; this is well shown by the fact that the returns for the routine medical inspection of school-children given in the annual reports of the chief medical officer of the Board of Education have, for some years past, recorded the incidence of defects of hearing as slightly less than 0·5 per cent.; indeed, the Board states that deterioration of hearing may go on for some time before it is detected. A reliable physiological method of assessing the hearing of school-children with reasonable speed is of the greatest value in detecting deafness at an early stage, so that appropriate treatment may be instituted; Dr. Crowden furnishes charts which demonstrate the improvement which has occurred after treatment. A modification of the gramophone audiometer has been made for the examination of children of pre-school age who are unable to write; this consists in a record of a series of words combined with pictures of objects which they represent.

THE ÆTIOLOGY OF AGRANULOCYTOSIS

CASES of agranulocytosis fall roughly into two groups—those secondary to sepsis or to administration of certain drugs, and those which are called primary or idiopathic because their cause is unknown. The number of chemical substances now recognised as capable of injuring the bone-marrow of susceptible persons is rapidly increasing. The injury may affect all the marrow components, giving the typical picture, during life, of an aplastic anæmia; or it may depress only one marrow element. Benzene derivatives usually produce a sharp fall of red cells, white cells, and platelets, but they may affect the granulocytes selectively; similarly, arsenobenzol derivatives may have a selective action upon these cells. Dameshek,[1] who has recently reviewed the hæmatological reactions recorded as following administration of gold salts such as Sanocrysin, shows that these have included complete aplastic anæmia, agranulocytosis, and thrombocytopenic purpura. It seems that the barbiturate group of drugs also—given alone or in combination with amidopyrin—may exert a selective toxic influence upon the marrow elements, more particularly the granulocytes. Watkins[2] reports that 24 out of 32 patients with primary agranulocytosis coming under his observation had taken one or both of these drugs before the onset of symptoms, while Madison and Squier[3] have described 14 cases in which the onset of symptoms was directly preceded by use of amidopyrin either alone or in combination with a barbiturate. When single doses of amidopyrin were given to each of two patients who recovered from the acute disease, their granulocytes were much reduced. In our present issue Dr. F. E. Loewy describes two cases of thrombopenic-hæmorrhagic purpura attributable to use of the hypnotic Sedormid (allylisopropyl-acetyl-urea) which is allied to the barbiturates. Both Loewy and Madison suggest that these effects are due to an allergic or "anaphylactoid" drug reaction. The widespread use of the remedies under discussion, compared with the rarity of agranulocytosis, indicates that, as with so many poisons, idiosyncrasy plays an important part in determining the character of the reaction.

Of cases commonly regarded as primary agranulocytosis, there are some at least in which yet other ætiological factors are concerned; for there is sometimes apparently a relationship between the neutropenic episodes and the hormones associated with menstruation. Over 80 per cent. of the recorded cases of agranulocytosis have been in women, and Thompson found that in 17 out of a group of 18 cases the subjective symptoms of agranulocytosis developed within one or two days of the onset of the regular menstrual period, and that all the patients were menstruating when admitted to hospital. In six of them there were one or more recurrences of neutropenia, always in association with menstruation. Jackson and Merrill have now reported in detail[4] the case of a woman who had had recurrent attacks of agranulocytic angina. She had herself noticed that relapses always took place on the first day of her menstrual period. Her peripheral blood picture was studied closely for ten months, and it was found that with the onset of each menstrual period the total number of neutrophil leucocytes fell precipitately, only to rise again rather rapidly to about the previous level. During this period there were two attacks of acute illness. Thompson[5] has also described the case of a man aged 25 who from the age of 2½ months has been known to have had a cyclic neutropenia. The cycles are identical, the attacks occurring at an interval of exactly three weeks. The fall in granulocytes definitely precedes the onset of fever and buccal necroses; it can be prevented by treatment with nucleotide K.96. If the granulocytes are maintained at normal levels by prophylactic therapy no subjective symptoms appear. As the patient also has diabetes insipidus and other signs suggestive of endocrine disturbance his hormone excretion has been studied, and it has been found that in his case definite variations in the excretion of female sex hormone and of gonadotropic hormone occur in association with a neutropenic period.

Without drawing further conclusions it is clear that in future the possible relationship of attacks of agranulocytosis to menstruation and to certain drugs—especially amidopyrin and the barbiturates—must always be borne in mind.

MORTALITY FROM APPENDICITIS

IN 75 leading American hospitals the number of cases treated for appendicitis has increased from about 18,000 in 1923 to over 26,000 in 1932, and of these nearly 94 per cent. underwent operation. Dr. Frederick Hoffman, who has collected[6] the figures, does not indicate whether there is a real increase in incidence or merely in resort to these hospitals, although he finds that the crude death-rate from appendicitis in 60 American cities (with an aggregate population of 29 millions) has risen from 133 per million in 1910 to 157 per million in 1932. A maximum of 180 per million was reached in 1929, since when there has been a decline. These figures have given rise to some anxiety, and in Philadelphia there has been inaugurated a campaign for the reduction in fatality of acute appendicitis by shortening the time between the onset of symptoms and recourse to hospitals and by preventing the administration of laxatives. A report of its

[1] Dameshek, W.: New Eng. Jour. Med., March 29th, 1934, p. 687.
[2] Watkins, C. H.: Proc. Staff Meet. Mayo Clinic, Nov. 22nd, 1933, p. 713.
[3] Madison, F. W., and Squier, T. L.: Jour. Amer. Med. Assoc., March 10th, 1934, p. 735.
[4] Jackson, H., Jun., and Merrill, D.: New England Jour. Med., Jan. 25th, 1934, p. 175.
[5] Thompson, W. P.: Ibid., p. 176.
[6] Jour. Amer. Med. Assoc., March 17th, p. 862.

progress is given [7] by Dr. John Bower. The case-fatality rate has, it appears, declined from 5·97 per cent. in 1928–29 to 3·44 in 1932, or by 42 per cent., a part of the improvement being due to earlier hospital treatment. The importance of this factor is suggested by the fact that during 1928 to 1932 only 2 per cent. died of those admitted within 24 hours of the onset of symptoms compared with nearly 10 per cent. of those whose admission was delayed till after 72 hours—though selection may play a part in this result for cases that become quiescent after 72 hours would tend not to be taken to hospital. There has also been some decline in the number of cases of peritonitis and the fatality experienced by them, and a less frequent administration of laxatives is reported. An influence, however, that may, it seems, have been largely responsible for the reduction in the fatality-rate is the considerable increase in the actual number of cases operated upon. In 1928–29 the average number of cases per annum was 2560; in 1930 the number rose to 3095; in 1931 to 3142; and in 1932 to 3546, an increase of nearly 40 per cent. in three to four years. Such figures suggest that there has been a considerable rise in the number of mild cases, which would favourably influence the fatality-rate—i.e., the ratio of deaths to cases. From such a sequence of events it appears that the active measures of such a campaign may reduce the number of deaths in the community but may at the same time increase considerably the "unnecessary" operations which Dr. Hoffman criticises. An increase in mortality, it may be noted, is not apparent in this country. In England and Wales as a whole there has been no appreciable variation in the death-rate from appendicitis over the last 20 years; the rate for males has fluctuated slightly around 80 per million, for females around 55 per million, with no tendency either to rise or fall.

NERVE-GRAFTING FOR FACIAL PALSY

A FILM illustrating the results of nerve-grafting for the relief of facial paralysis, as carried out by Dr. A. B. Duel of New York, was shown to the council of the Royal College of Surgeons of England on April 12th. The method adopted is the result of a series of experiments by Dr. Duel and Sir Charles Ballance. A small peripheral nerve is prepared by section in situ 10 to 21 days before the operation, and this nerve is implanted in the Fallopian canal without sutures and covered over with gold foil. Rapid recovery may take place even where the facial paralysis has existed for some time, but in cases of long standing the decision whether operation shall be undertaken must depend on whether the muscles of the face respond to the galvanic current. It is found that when prepared grafts are used the faradic response returns in the palsied muscles in less than half the time required when a fresh nerve-graft is employed. The degenerated nerve-graft consists of a series of tubes through which the axis-cylinders of the central nerve segment push their way.

Sir Charles Ballance left America 18 months ago and has not been able to continue in London the work he was doing with Dr. Duel. The latter, however, has gone on with the research on monkeys and has also, it was stated, treated with great success a large number of patients suffering from facial palsy. In cases of Bell's palsy he has operated on many cases, decompressing the inflamed and swollen nerve in the aqueduct by removing the outer bony boundary of the canal and slitting up the fibrous sheath. Anastomosis of the facial nerve with another nerve in the neck is definitely abandoned for the operation of exposing the nerve in the canal, excising the diseased or damaged portion, and placing a prepared graft in the gap so formed.

On the same occasion Mr. V. E. Negus showed a film illustrating ciliary activity and the action of various drugs on ciliary movement.

[7] Ibid., p. 813.

MEASLES SERUM

OUR advertisement columns contain the announcement that a limited supply of serum obtained from patients convalescent from measles is available at the London Fever Hospital and may be had by practitioners who wish to use it for the protection of infants and young children. It is now generally agreed that a single injection of such serum is usually sufficient to prevent or modify an attack of measles: if temporary protection is desired the injection should be given on or before the fifth day of incubation; if the object is to ensure a mild attack with subsequent immunity it should be deferred until the sixth to ninth day.[1] The principal obstacle to a more general use of this preventive is the difficulty of obtaining a sufficient supply, and the committee of the London Fever Hospital would be glad if patients who have recently had the disease would volunteer to attend and have blood taken. It is felt that practitioners may be able to bring this useful service to the notice of some of their patients who would like to play a part in safeguarding others.

REFUGEE SCIENTISTS

FOR over a year, through the work of the German Refugees Assistance Fund, a certain number of Germans of academic and professional standing have been enabled to continue their studies, and in some cases to find a paid outlet for their talents. But despite the efforts of a powerful body of supporters, the fact remains that the list of those who need similar assistance is sadly large. It is estimated that there are at least 60,000 refugees of this kind outside Germany, and most of these are dependent to some extent on charity or the kindness of friends, for any savings they were able to bring from their home land are exhausted by now. We are informed that there are 9000 medical doctors on the list of the International Committee for the Relief of Refugee Professional Workers, of whom a proportion—how many is unknown—are in this country. The financial call is very large, but no more worthy object for subscription can be found. The German Refugees Assistance Fund acknowledges that only if large sums are available for making settlements can the destitution really be reduced, but with the coöperation of such societies as the Academic Assistance Council, the International Student Service, the Germany Emergency Committee of the Society of Friends, the International Committee for Assisting Refugee Professional Workers, and the Save the Children Fund substantial support may be hoped for. Comparatively moderate subsidies at the present moment may, however, lead to members of the medical profession who are now in receipt of charity becoming not only self-supporting but able to help others, as witness the following typical cases: "A B, aged 50, married (two children), bacteriologist, dismissed after 21 years' service because grandparent was Jewish, engaged on work of extreme importance; £250 needed for maintenance for one year. C D (M.D.).

[1] THE LANCET, Feb. 3rd, 1934, p. 254; also 1932, ii., 572; 1933, ii., 981.

Was in charge of department in well-known Berlin hospital. Has to keep parents. Can enter into partnership in Italy as soon as he has British qualification. Requires assistance towards paying examination fees, £45. E F (a lawyer) can be re-trained for agriculture in Denmark, and then has chance of going to Palestine, £40. Expenses required for several doctors taking up positions in Turkish hospitals, £120 each." The quotations are from the German Refugees Assistance Fund, and we bring the plea of that Fund before our readers with full knowledge that they have urgent claims upon them already furnished by the needs of our own charities. But their help can be great if they will give publicity to the work of the Fund, and lead the public to realise that the progress of all that makes the world habitable is linked up with the labours of the academic and professional classes. There is no question of the employment of more foreign medical practitioners in Britain, and this is recognised by the Fund.

THE VIRUS OF MUMPS

QUITE apart from the results of attempts to reproduce mumps experimentally there are grounds for believing that it belongs to the group of filtrable virus diseases. It is highly contagious, one attack confers a solid and lasting immunity, and when it has been possible to examine the specific lesion histologically the inflammatory reaction has been seen to be predominantly mononuclear. Experimental investigation of the disease dates from 1908 when Granata published some suggestive findings. M. H. Gordon's [1] work several years later was more conclusive. He demonstrated the presence of a filtrable agent in the mouth washings from early cases of mumps, but in only one instance did he show that this agent was capable of producing a parotitis in experimental animals and serial passage was not achieved. Martha Wollstein [2] carried the matter further. Investigations pursued by her between the years 1916 and 1921 showed that the filtered mouth washings from early cases produced an inflammatory reaction when inoculated into the parotid or testis of the cat and that serial passage was possible, though not indefinitely so, in this animal species. She also found that the virus was present in the blood of patients with severe constitutional symptoms. The ensuing decade saw two further attacks on the problem. Y. Kermorgant's [3] work claiming to show that mumps was due to the combined action of a spirochæte and a Gram-negative bacillus remains unconfirmed and unconvincing, and F. F. Tang's [4] findings in guinea-pigs give the impression that if he was dealing with a filtrable virus it was not the virus of mumps.

Recent work by C. D. Johnson and E. W. Goodpasture [5] leaves little doubt that mumps is in fact produced by a filtrable virus. Their experiments were made on monkeys (*Macacus rhesus*) and the material investigated (fresh saliva) was introduced directly into Stensen's duct in quantities of 2 c.cm. Saliva from six early cases was thus inoculated into six macaque monkeys; two monkeys received a similar inoculation of normal saliva and served as controls. The introduction of this volume of fluid caused an immediate enlargement of the parotid gland which, however, subsided in two to four days. Nothing further happened in the two control monkeys and in two of the six receiving mumps saliva. But six to eight days later the remaining four monkeys developed fever, accompanied by swelling of the parotid gland and œdema of the surrounding tissue. They also showed definite changes in their blood picture: a leucocytosis, appearing just before the onset of pyrexia, was gradually replaced by a leucopenia with a monocytosis and a relative lymphocytosis. Histological examination showed that these glands were the seat of focal degeneration and necrosis affecting single acini or groups of acini. Suspensions of the extirpated parotid glands when passed through Berkefeld filters reproduced the disease in monkeys and serial passage was realised up to the seventh generation. Monkeys which had recovered from the infection proved resistant to reinoculation, but neutralisation experiments with human convalescent sera gave inconclusive results. When it is added that Johnson and Goodpasture also demonstrated the resistance of this filtrable agent to freezing, drying, and glycerol, it will be realised how complete is the story which they present.

[1] Local Govt. Board, Pub. Health Rep. No. 96, London, 1914.
[2] Jour. Exper. Med., 1916, xxiii., 353; 1918, xxviii., 377; 1921, xxxiv., 537.
[3] Ann. de l'Inst. Pasteur, 1925, xxxix., 565.
[4] Nat. Med. Jour. China, 1930, xvii., 360.
[5] Jour. Exper. Med., 1934, lix., 1.

Summer Time will commence in Great Britain, Ireland, the Channel Islands, and the Isle of Man on Sunday morning next, April 22nd, at 2 A.M., when the hands of timepieces should be advanced one hour. It will end on Sunday, Oct. 7th.

"INDIA," by Lieut.-Colonel F. D. S. Fayrer, I.M.S. (rtd.), M.A. Cantab., F.R.P.S., is the title of an exhibition at the Galleries of the Royal Photographic Society of Great Britain, 35, Russell-square, W.C.1, which will be held from May 3rd to 31st, 1934.

FOR reasons of health Mr. F. W. Ramsay has resigned his prospective presidency of the British Medical Association during the coming year. In his place Dr. Sydney Watson Smith, physician to the Royal Victoria and West Hants Hospital, has been appointed president for 1934–35, and he will take office at the annual meeting of the Association to be held in Bournemouth next July.

A SPECIAL meeting of the Fellows of the Royal Society of Medicine will be held on Tuesday, May 1st, at 8 P.M., when a demonstration will be given by Dr. Russell Reynolds on X ray cinematography. Some interesting films will at the same time be shown by Dr. Robert Janker of Bonn. The meeting has been devised in order to bring Dr. Janker into contact with Dr. Reynolds, as both have been working with a view to bring cinematograph technique within the bounds of application for use with X rays. Dr. Brailsford dealt with some aspects of this application in an address summarised on p. 877 of our present issue. It should be noticed by Fellows that admission can be by ticket only, and applications for these should be addressed to the secretary of the society at 1, Wimpole-street, W.1.

COURSE ON MENTAL WELFARE.—The Central Association for Mental Welfare have arranged a course for officers of local authorities and local associations for mental welfare engaged in work among the mentally defective. It will be held in London from June 30th to July 21st and will include lectures and practical work. Applications should reach the secretary of the association, 24, Buckingham Palace-road, London, S.W.1, before June 11th.

PROGNOSIS

A Series of Signed Articles contributed by invitation

III.—TUBERCULOUS LARYNGITIS

THE improvement in the prospect of recovery from tuberculosis of the larynx may be well exemplified by quoting Sir Morell Mackenzie, who wrote in 1880 that "the prognosis is always extremely grave, and it is not certain that any cases recover." The second statement in this quotation is certainly no longer true, for a considerable proportion of patients do now recover. This is in part due to a more general early recognition of the disease, for the laryngologists' plea for the routine laryngoscopic examination of all consumptives has been more widely accepted, and in part to the better management of the laryngeal disease by vocal rest and the judicious application of local treatment; but it is chiefly to be attributed to the gradual advance in the treatment of phthisis, and especially to the adoption of such methods as artificial pneumothorax and phrenic evulsion. To-day the advantages of sanatorium treatment have been brought within the reach of a far wider circle of consumptive patients, and accommodation for those in the poorer ranks of life has gradually been made more commensurate with their needs.

FAVOURABLE AND UNFAVOURABLE SIGNS AND SYMPTOMS

Laryngeal tuberculosis is but a complication of pulmonary phthisis, and the prognosis therefore depends primarily on the extent, virulence, and progress of the pulmonary disease, and secondarily on the situation and extent of the laryngeal lesions; that is to say, if the lesions in the lungs are in a curable stage, cure of the larynx is nearly always possible, and is probable if the laryngeal affection is not far advanced. On the other hand, if the pulmonary disease is not curable, the patient will sooner or later die of consumption, even though the laryngeal lesion becomes healed; and in such cases reinfection of the larynx is liable to occur. The condition of the larynx can, and not infrequently does, improve while the disease in the lungs is progressing, but the lungs never get better while the laryngeal disease is advancing. The progress of the general disease, and the resistance of the patient, can only be estimated after some weeks of observation under the most favourable conditions attainable, preferably in a sanatorium, with a careful record of the weight, temperature, pulse, and appetite. The temperament of the patient is also of importance; the *spes phthisica*, so often encountered, is a valuable aid to recovery, but may induce the patient to be careless and intolerant of the details of the régime prescribed; his active coöperation is necessary, and it has been well said that no fool is cured of the disease. Unfavourable symptoms are persistent elevation of temperature in spite of rest, rapid pulse, lack of appetite, loss of weight, and a bad family history. Pregnancy has a particularly bad effect on tuberculous laryngitis, and early induction of abortion has even been advocated.

In mixed syphilitic and tuberculous disease of the larynx the prognosis is bad. Age has an influence on the prognosis, older patients withstanding the disease better than younger ones; tuberculosis is seldom rapidly progressive in persons over 40 years of age. Biological tests may be of service in the estimation of the patient's resistance; Dr. F. R. G. Heaf[1] attaches importance to the information derived from serial examinations of the blood, and finds a rapid sedimentation-rate, with a high monocyte and low lymphocyte and eosinophil counts, of serious import.

[1] THE LANCET, 1933, ii., 710.

THE SITE OF THE LESION

With regard to the site of the laryngeal disease, the most favourable is superficial infiltration or ulceration of the vocal cords, and with similar lesions or papillary outgrowths in the posterior commissure the prognosis is also fairly good. Infiltration at the upper aperture is far more serious than disease within the larynx; partly because it is of greater mass and extent, partly because it usually occurs when the interior of the larynx is already involved, but chiefly because it so often causes dysphagia. This is especially true of disease of the epiglottis, which is of the worst prognostic import; an exception to this is the rare case in which the epiglottis is the only part affected; I have seen two such cases, in both of which removal of the epiglottis resulted in cure. Another exception is the "lupoid" type of tuberculous laryngitis. This is relatively rare, and is associated with chronic pulmonary disease; it attacks the upper aperture early, is painless, and is characterised by slow progress and a tendency to heal with considerable formation of fibrous tissue. Of 255 cases at Mount Vernon Hospital, the proportion of deaths was 1 in 6½ where the epiglottis was involved, 1 in 9½ in disease of the arytenoids, and 1 in 35 when the cords alone were affected. Perichondritis is of very sinister import, but there is one exception to this, namely, when tuberculosis attacks the thyroid cartilage as a primary disease; in such cases, if the swelling points externally, the outlook is good, especially if, as sometimes happens, there is no pulmonary disease. Miliary tubercles in the larynx are a terminal affection and indicate a rapid dissolution, and so too does the spread of ulceration to the fauces.

THE STAGE OF THE GENERAL DISEASE

In general, the more extensive the tuberculous infiltration, the worse is the prognosis; but the mere fact that the larynx has become invaded is a sign of the patient's lowered resistance and lessens the prospect of recovery. Sir StClair Thomson,[2] in following up cases of phthisis, found that the presence of laryngeal tuberculosis doubled the mortality; over an equal term of years, of patients with an intact larynx two out of three will be alive, but only one out of three of those with a laryngeal lesion. He reported in 1914[3] at the King Edward VII Sanatorium arrest of the local disease in 20·7 per cent., and more recently in 1924[4] in 25 per cent.; I recorded at the Mount Vernon Hospital in 1905[5] a proportion of 20·85 per cent. in a series of cases which excluded those admitted in a very advanced stage, chiefly for the relief of dysphagia. But it must be remembered that these figures were compiled before the treatment of tuberculosis in general had progressed as far as it has at present, and moreover that statistics of the cure of laryngeal tuberculosis can never be of more than approximate value, since results depend greatly on the class of patient and on the stage of disease

[2] Thomson, StClair: Diseases of the Nose and Throat, London, 1926, 3rd ed., p. 710.
[3] Brit. Med. Jour., 1914, i., 801.
[4] THE LANCET, 1924, ii., 948.
[5] Lake and Barwell: Laryngeal Phthisis, London, 1905, 2nd ed., p. 87.

at which these come under treatment. Thus a series of cases seen in private practice, or in sanatorium, where the diagnosis is made in an early stage, will show better results than those treated at a throat clinic, where the patients seldom present themselves until symptoms of trouble in the throat have already become obvious.

CONCLUSION

The larynx is far more prone to invasion when the pulmonary disease is advanced than when it is in an early stage. Here again statistics differ greatly: in group I cases of phthisis laryngeal tuberculosis has been found in from 4·50 to 13·75 per cent., among group III cases in between 31 and 72 per cent., and post mortem in from 48 to 83 per cent. The percentage of cases of arrested laryngeal disease is, of course, materially diminished by the large proportion which occurs in a late stage of consumption, where there is no prospect of recovery; in these it is not the disease in the larynx which causes death. But, where the pulmonary disease is still in a curable stage, I would repeat that cure of the larynx is nearly always possible, and we may expect that the percentage of cures will increase as early diagnosis becomes still more frequent and facilities for modern treatment are extended.

HAROLD BARWELL, M.B., F.R.C.S.

Consulting Surgeon for Diseases of the Throat and Ear to St. George's Hospital, and formerly Laryngologist to the Mount Vernon Hospital for Diseases of the Chest.

SPECIAL ARTICLES

MEDICINE AND THE LAW

Blood Test Offer in Affiliation Proceedings

APPEARING last week before the Chatham magistrates on behalf of the mother in affiliation proceedings, an advocate expressed the opinion that, sooner or later, blood tests would be regarded as a necessity in these and other cases. He offered to have the blood of the mother and her child tested, provided that the putative father would also submit to the same test. He also undertook to pay the costs of the medical research involved in the classification and comparison of the blood specimens. The offer was not accepted, and the magistrates seem to have treated it rather as a forensic flourish than as a serious contribution to the evidence; they had, of course, no power to compel the parties to undergo blood tests.

The case was a remarkable one. In 1931 Miss Sophie Batchelor obtained an affiliation order against Mr. John Smith for payment of 10s. a week. Mr. Smith strenuously denied paternity; he refused to obey the order and was committed to prison no fewer than 19 times in default of payment. Last February Miss Batchelor was charged with perjury in connexion with the affiliation proceedings of 1931; she was found guilty at Maidstone assizes before Mr. Justice Roche and was sentenced to six weeks' imprisonment. The judge on that occasion expressed the opinion that Miss Batchelor had got her order by fraud and that the order ought not to be further enforced. The original finding of the magistrates against Mr. Smith, however, still stood in spite of the verdict of perjury against Miss Batchelor. Nothing less than an Act of Parliament could undo the magisterial decision that Mr. Smith was the father of Miss Batchelor's child, but Mr. Smith could at least apply to have that part of the order varied which compelled him to pay 10s. a week. When Mr. Smith gave evidence for this purpose last week he was asked in cross-examination if he would undergo a blood test. He answered that, if it was legal and if it would alter his obligation, he would undergo any test. The magistrates, without waiting for tests, found themselves able to revoke their order for the payment of 10s., inasmuch as it had been made on the faith of Miss Batchelor's evidence, which had now been found to be false. It has since been reported that the magistrates are being asked to state a case on Miss Batchelor's behalf for decision by the Divisional Court. An undertaking was given at the Maidstone assizes that she would take no further proceedings against Mr. Smith; evidently this was not interpreted as barring her from defending herself against Mr. Smith's attack on the order.

If his remarks were correctly reported, Miss Batchelor's legal representative last week seems to have put the evidential value of blood tests surprisingly high. He said he was informed that, out of 20,000 cases where blood tests had been made, it had been possible to establish definitely in 15,000 the existence of a certain blood relationship and to negative it in 5000. His opponent replied that he understood the blood of human beings could be placed in three groups. If the child's blood was found to belong to "A" group and the putative father's to belong to "B" group, it might be possible to say definitely that the man was not the father of the child. If the blood of both belonged to the same group, it would prove nothing. "My own blood might belong to the same group; could it be said in these circumstances that I am the father of the child?"

IRELAND

(FROM OUR OWN CORRESPONDENT)

CONDITIONS IN THE ARMY MEDICAL SERVICE OF THE IRISH FREE STATE

LAST week Mr. F. Aiken, the Minister for Defence, received a deputation appointed by the Irish Medical Committee and introduced by Dr. P. O'Dowd, T.D. The members were Dr. R. J. Rowlette, T.D., Dr. J. P. Shanley, and Dr. P. MacCarvill. It was pointed out to the Minister that the conditions concerning pensions for medical officers were not satisfactory. The pension given to a medical officer represented a much lower proportion to his salary than was the case with an officer in other branches of the Army. There was no reason for such discrimination against the medical service. Again, the rank of the head of the medical service was that of major, a rank lower than that held by the heads of the other branches. When the National Army was established the first medical head held the rank of major-general; on his retirement his successor was given the rank of colonel; since then the rank had been that of major. The deputation suggested too that the head of the medical service should be a member of the Army Council, in view of the fact that the work for which he was responsible was of primary importance, and was so highly technical that it could not be properly represented by a non-medical officer. The deputation impressed on the Minister that they had no wish to embarrass him, but they believed that he would be helped by occasional consultation with representatives of the medical profession. He promised to study the points that had been put before him.

CORRESPONDENCE

SAFE MILK

To the Editor of THE LANCET

SIR,—May I, as a milk-producer, comment on the memorandum on the milk-supply which appeared in your issue of April 7th over the signatures of a number of distinguished professional men? Anyone with inside knowledge of the milk industry must, unless he is blinded by prejudice and a hopeless reactionary, agree whole-heartedly with most of its conclusions and recommendations, but the condemnation of Certified and Grade A (Tuberculin-Tested) milk is somewhat disheartening to those who, like myself, have devoted much thought and hard work in the endeavour to produce a "safe" milk. For years we have been lectured about tuberculosis and the menace to human beings from bovine sources, and urged to free our herds from tuberculosis; and now, having done that, we are told that our milk is still not safe. I am not seeking to excuse the producer of dirty milk, but I ask—is there any foodstuff which can be regarded as absolutely fool-proof and safe? Occasional cases of milk-borne disease there have always been, but I seem to remember outbreaks of poisoning from meat pies, and even water has not altogether a clean record. Five hundred cases per annum of undulant fever, a disease of recent discovery and not very serious I believe, seem insignificant in proportion to the millions of gallons of milk consumed in the same period. Whatever one eats or drinks, one must take some risk. I cannot remember any doctors jibbing at the oysters on occasions when I have been privileged to dine in their company, though I certainly knew one who always cut all the crust off his bread and had his strawberries washed in a weak solution of permanganate of potash. One wonders whether doctors are not going a little too far with their hair-raising stories about milk. However, be that as it may, I am not one of the reactionary farmers who would argue the point and say that milk production to-day is perfect, and I am not qualified to discuss the merits of pasteurisation from the medical point of view. I want to work with the doctors all the time and do whatever I can to fall in with their views, if they on their part will help those of us who are trying to improve the milk-supply, and give us some guarantee they will not change their minds too soon.

As things are at present, the producers of Certified milk cannot pasteurise—the Minister of Health will not let us—but if the doctors can persuade the Minister to alter the regulations, I, for one, will certainly pasteurise for those who want it. There is no mention in the memorandum of palatability or vitamins. Many milk drinkers dislike the peculiar flavour imparted by pasteurisation, and I think that they might be allowed, after due warning of the awful fate in store for them, to take the risk of drinking their milk raw, provided the milk is of T.T. origin and produced under satisfactory conditions of cleanliness. And—are vitamins out of fashion? One knows that fashions change, in medicine presumably as in other spheres. It does not seem long since the doctors were stressing the importance of vitamins; but now, apparently, their importance is quite secondary.

But if we farmers are to coöperate with the doctors, it is only fair to ask that there should be some measure of agreement in the profession, and also that some steps should be taken to impress on doctors the desirability of acquiring some knowledge of milk production and distribution and the various regulations affecting the same. In my own experience of producing and selling the highest grade of milk I have come in contact with many doctors. From some I have had unstinted praise for my efforts, some have helped by recommending my milk to their patients, and some have even gone so far as to buy it for use in their own households. Still more have recommended it to their patients but have not taken it themselves, and I could fill more space than you, Sir, are likely to allow me with a recital of their various reasons for not doing so—especially the married ones. The majority do not seem to be interested at all, and display an ignorance of the whole question which is appalling in persons having their responsibilities. I venture to say that 75 per cent. of general practitioners do not know anything at all about either the Milk and Dairies Order or the Milk (Special Designations) Order, and 50 per cent. are still under the impression that Grade A milk is the highest obtainable grade.

It is a matter of regret that the memorandum deals almost entirely with milk production, and the question of contamination in distribution is ignored. In particular, one seeks for a condemnation of the out-of-date and filthy system of distribution by means of the open pail—even some of the doctors still have their milk ladled out on the back doorstep next to the ash-bin, the operation, in all probability, being performed by an unhygienic youth smoking a cigarette, and whose use of the pocket handkerchief is neither as frequent nor as thorough as the fastidious might consider desirable. But the poor farmer gets the blame for the septic sore-throat every time, and some of us who are really trying are apt to get a bit disheartened.—I am, Sir, yours faithfully,

Woolow, Buxton, April 14th. HAROLD C. LINGS.

THE PREVENTION OF CANCER

To the Editor of THE LANCET

SIR,—Dr. Cramer's paper in your issue of Jan. 6th marks a new start for the campaign against cancer. It embodies features which are essential for further progress towards control of this disease in man. The first of these is the shifting of the centre of cancer research from the laboratory and animal house to the community of man all over the world. I am not at all ungrateful to animal cancer experimenters; indeed, I believe they have established many important facts. But animal experiments with practical results applicable to cancer in man are few and far between.

A second promising feature of Dr. Cramer's paper is that he is trying to draw practical inferences from what is known about cancer in man. There are many observations, I believe, whose potential significance has not yet been fully explored; for example, the fact that a single cancer appears in a wide precancerous lesion; the fact that multiple primary cancers may originate simultaneously; and the genetic relation between the cells of the primary cancer and their host as emphasised by E. F. Bashford in 1911.

Dr. Cramer says that "a diminished frequency would indicate that the development of cancer in one site increases the resistance to the development of cancer in other sites, and thus protects against a subsequent carcinogenesis in other tissues and organs. Such a result would suggest obvious

possibilities." Dr. J. A. Murray, in 1923, hinted at the same thing when he spoke of "a systemic constitutional change in the organism in which cancer has developed, a change which, if it could be recognised with certainty and rapidity, would enable us to recognise cancer in its earliest stages, and could we produce it without initiating new growth, would place in our hands a rational means of prevention" (Imper. Cancer Research Fund, 8th Scient. Rep.). Again, Sampson Handley in his book the "Genesis of Cancer" (1931) says: "It would seem that the explosion of one carcinoma nearly always inhibits the development of others by some biochemical process of which we are in ignorance.' And later he adds: "From the observation of Dukes that intestinal polypi tend to disappear after the appearance of a carcinoma, it would seem that this inhibitory power of a carcinoma is exerted also over papillomata." My own observations on the bilharzial cancer of the bladder, which is the commonest form of cancer met with in our post-mortem material, are in line with these statements. Although the bladder may present many bilharzial lesions, the cancerous process starts in one place only, and never in such bladders have I seen elevated papillomata associated with a declared carcinoma.

Analysing these facts, and inspired by Murray's writings, I argued that in order to prevent cancer it may be necessary to induce in the somatic epithelial cells of the normal person a biological state similar to that which is forced on them by the presence of a primary cancer. One way of doing this would be by artificially producing an anatomical association resembling that which obtains between a host and his primary cancer. This might be achieved by subcutaneously inoculating the normal person with living human cells which bear to him a relation similar to that which the cells of the primary cancer bear to their host. A source of such living human cells, I suggest, would be the fresh umbilical cord of a new-born child of the person in question, the covering of the umbilical cord being epithelium which is continuous at the umbilicus with that of the skin of the fœtus. Later the blood-cells of the offspring, injected into the parent, might suffice to maintain the desired inhibition.

The idea is that by inoculating a normal person with a living new generation of epithelial cells genetically related to him, we may imitate the biological state produced in man by the presence of a primary cancer in his body, and thereby protect him against subsequent carcinogenesis. In other words, we may thus succeed in diminishing the "intrinsic factor." It is obvious, however, that a very strong stimulus would always overcome an induced inhibition of this kind, and to any who may be inclined to test the effect of inoculating animals with living epithelial cells from their offspring I would like to suggest that the method should be tried as a means of preventing spontaneous cancer in normal animals and in strains of animals of various degrees of susceptibility and not as a protection against the initiation of cancer by highly potent carcinogenic agents. Such agents luckily are not in operation in human cancer of man, and in biological experiments we should imitate natural circumstances so far as we can.

The idea of preventive inoculation with a new generation of related living cells may, if accepted, open up a new field of experiment bearing more closely on human cancer than the work which has been done on resistance to transplanted tumours. Though very interesting, the results of such transplantation are obviously not applicable to man. The fact that resistance to transplantable tumours can be induced by inoculating an animal with normal tissues, such as living embryonic skin or living blood-cells or living placenta cells or living spleen cells of the same species, shows that tumour tissue when it produces a similar resistance acts in its capacity as a tissue and not as a mysterious thing called cancer. Again, the experiments done with autologous and homologous transplants have established the specific biological individuality of each organism, each one differing even from others of its own species. Cancer in man therefore should be considered not only as species-specific but also as individually specific—perhaps more so than in animals in which random mating obtains. The living cells of the progeny are, mathematically speaking, only half genetically related to their father and mother, but they are the only living new generation of genetically related cells that we can possibly lay hands on for a normal individual.

Thirdly, Dr. Cramer bids us no longer pay too much attention to what he calls "the nature of the intimate cellular change which transforms the normal cell into a malignant one." "Even if we did possess a knowledge of this change," he says, "it by no means follows that this would enable us to identify the external conditions which bring it about." This advice, I believe, is well founded—especially since we already know the following facts:—

(1) Cancer in man originates from an epithelial tissue that has been responding by proliferation to a stimulating irritation for a time long enough to be an appreciable fraction of a lifetime.

(2) Such long-standing irritation is always accompanied by important changes in the subepithelial connective tissue, and these are such that they interfere with the nutrition, oxygenation, and drainage of the superjacent epithelium.

(3) Whether or not the cells of this epithelium are directly injured by irritation, their circumstances are those most likely to bring on exhaustion and senescence.

(4) Senescence in a living community of cells is the signal for the formation of rejuvenated cells.

(5) Under normal conditions rejuvenated cells are made by an exchange of nuclear material between two senescent cells. No senescent cell can be rejuvenated from its own resources so long as it remains in the medium which brought about its senescence.

(6) Rejuvenation in nature is accomplished, in most of the well-studied forms of life, either by conjugation or fertilisation.

As I have suggested in a previous letter (THE LANCET, 1932, ii., 421) I believe we are justified in thinking that such a process of rejuvenation is responsible for the formation of "the cell" which forms the germ of a primary cancer. This origin would explain the phenomena both of spontaneous and experimental cancer in man and animals; and it provides the genetic relation between the individual and his primary cancer. I urge that we may, for the moment, rest content with this theory of the origin of the primary cancer, based, as it is, on strong analogy.

The chromosome complex of the somatic epithelial cells is identical with that of the primordial cells of the gonads; even the sex chromosomes are present, as was shown by H. M. Evans and O. Swezy in 1929. The somatic epithelial cells are living units, and if a community of them become depressed and senescent, rejuvenation should take place as it does in other living communities. Nature does not double her methods.—I am, Sir, yours faithfully,

M. F. SOROUR,
Medical Faculty, Cairo. Assistant Professor of Pathology.

GALL-STONES AND CARDIAC PAIN

To the Editor of THE LANCET

SIR,—Perhaps it is less unpermissible in medicine than in any other subject to inflict upon others one's personal experiences. The leading article in THE LANCET of April 14th on gall-stones and cardiac pain will perhaps be considered a sufficient excuse for this letter.

When a student at St. Mary's Hospital aged 23 years I had the honour of being reported in THE LANCET as a remarkable example of recovery from a very severe acute ulcerative colitis, owing my life to the skill of Sir William Broadbent, Dr. Sidney Phillips, and Dr. H. A. Caley, and to splendid nursing. This I mention because I believe this illness to have been probably the original cause for a subsequent cholecystectomy in 1931 for impaction of gall-stones in the cystic duct. This latter condition was a very puzzling one, without any violent pain, vomiting, or, as is frequently the case, jaundice. Eventually when examining at Glasgow I found a tumour which overnight felt like a growth in the bowel. The next morning it had quite disappeared, and having no desire to have fragments of my bowel excised I concentrated my mind upon the candidates. When later I asked kindly colleagues to find the tumour it had always disappeared, and certain other symptoms made the diagnosis vacillate between hysteria and coronary thrombosis. The tumour at last decided to stay long enough for Dr. C. Bolton and Mr. Gwynne Williams to confirm my diagnosis of its erratic existence, and at my request Mr. Williams cut it out with complete success. It was a strange-looking gall-bladder, I was told, with two impacted stones in the cystic duct.

For years at intervals I had had some rather horrible attacks, and later they could be divided into two types. The first consisted in waking at night with a strange feeling of what I would call an "internal sinister silence" allied to the feeling that you would expect when, having heard a stealthy step in the dark, you waited expecting to feel a dagger stuck into your heart. Then began a boring pain in the back and a steady progressive sensation of distension which in bad attacks made one feel one would burst. The pain was not acute but the general discomfort very great. The other type was of the anginal variety so well described by E. Doumer and quoted in your leading article. There occurred a sudden intense sense of impending dissolution. It was not painful, and only once or twice did a start of pain or numbness run down to the left elbow. I had many attacks and they were most interesting, when they were over, because they came on quite unexpectedly. One, for example, occurred when I was alone in my laboratory and had just picked up my hat to leave. I exclaimed involuntarily "It's all up," and yet ten minutes later walked down the stairs quite comfortably. The other was more embarrassing and occurred while I was examining in pathology for the M.R.C.P. A candidate had just commenced examining a specimen and fortunately the Bedell of the College had come into the room. The attack was gradual and gave me time to reach him, and I said "fetch me a wineglass of neat brandy." He did, and I drank it down and am not aware that I showed more ignorance of pathology after the attack than I had before. I got to learn thoroughly what a wonderful description that is "a sense of impending dissolution."

Nearly three years have passed since the cholecystectomy and I have never had another attack of this kind. Exertion never brought them on and I can still play a minus 20 grade game of tennis or golf; even when they were occurring I could play a game of cricket without the slightest threatening of an attack. Should any of my friends the cardiologists happen to slip off the heart on to the gall-bladder I can hear them say, "What about your T wave?" I confess I object to my T wave being questioned. If it is depressed then I might be depressed, and I much prefer my memories of the alcoholic wave to any memory of my T wave. What I can say now is that I do not live upon neat brandy, though no remedy equalled it for those attacks. I have been able without disaster to do the duties of a physician to two hospitals for two and a half years since the operation, to continue examining and disturbing the peace of others with written articles on various subjects. I can also say that up to this moment the attacks have ceased and, if anything, I can take stairs better than four years ago, and increasingly better.

As far as direct personal observation is of value I am convinced that there was a mysterious relation between the condition of the gall-bladder with its vagal and sympathetic innervation and the anginal type of my symptoms, because since Mr. Gwynne Williams cut off the poor relation these strange attacks have ceased, and I have done nothing to prevent their recurrence except to decide that without a gall-bladder it is well not to eat hot fat or a large dinner. I am, Sir, yours faithfully,

Harley-street, W., April 16th. F. JOHN POYNTON.

MALNUTRITION

To the Editor of THE LANCET

SIR,—At a recent meeting in London several members of the medical profession found themselves in general agreement on the following points:—

1. That there exists in this country widespread undernourishment among the families of unemployed and low-paid workers.
2. That this must inevitably lead to a steady deterioration in the physical standards and health of the population; and of this deterioration there are already signs.
3. The last thing upon which a community must economise is the nutrition of its working class.

We are perfectly aware that the nutritional standards of the working class can only be maintained and improved by an increase, often a considerable increase, in the scale of wages and relief, and by an extension of such services as school feeding and the provision of milk and meals at clinics, &c. Demands of this kind are constantly made by organised labour; and these demands frequently resolve themselves, in our opinion, into a claim for sufficient and proper nourishment. It is not our business collectively to initiate such demands and campaigns. But we do consider it our business to give the widest publicity to the facts as we know them, and to place our material at the disposal of any individual or organisation that wishes honestly to combat malnutrition.

A committee has been established, to be called the Committee Against Malnutrition. Its aim is solely that of giving numbers of persons throughout the country the opportunity of centralising their information and coördinating all efforts to one end—the securing of adequate nourishment for every man, woman, and child. We invite all members of the medical profession, scientific and social workers, who agree generally with our three premises, to become associates of the committee. Subscriptions are fixed

at 5s. a year (to entitle associates to the bi-monthly bulletin of the committee), such subscriptions covering no more than postage and the purchase of reports, journals, &c., necessary for the committee's work. The committee is undertaking the following work; and associates, where they themselves desire it, are invited to participate.

(1) Publication of bi-monthly bulletin of extracts from the recent reports, publications, &c., sociological and political notes on public nutrition. To this bulletin associates are invited to contribute. (2) Articles and letters to the press, national and provincial, on the subject of malnutrition. (3) Publication of pamphlets and books and assistance to all suitable organisations desirous of issuing such pamphlets. (4) Lectures to such organisations as teachers' groups, religious bodies, coöperative guilds, trade-union branches, and so forth, and the supply of notes to any who wish to lecture. (5) Suitable support to any direct campaigns for increase of food standards—e.g., for free school feeding for families of unemployed workers, provision of free milk at clinics, meals at nursery schools, scales of relief adequate to supply full nourishment, and so forth.

It is not intended to publish any list of associates, but the committee will always be pleased to put associates into touch with one another and with interested organisations. Those who wish to apply for associateship, or who desire further information, are invited to write to the bureau secretary, F. Le Gros Clark, 19c, Eagle-street, Holborn, London, W.C. 1. On behalf of the committee,

We are, Sir, yours faithfully,

HELEN M. JARDINE, M.B., M.M.S.A.
AUDREY E. RUSSELL, M.B.
FRANCIS LOUIS, F.R.C.S.
SAMUEL LEFF, M.B.
F. LE GROS CLARK, B.A.

THE BLOOD-BRAIN BARRIER IN INFECTIOUS DISEASES

To the Editor of THE LANCET

SIR,—In the valuable paper on this subject by Dr. Friedemann and Dr. Elkeles, published in THE LANCET for April 7th and 14th, there occur two statements which cause me no little surprise. The first, which is repeated in different words more than once, is that "the current opinion [is] . . . that death in diphtheria is due to poisoning of brain centres" (p. 720). Now, whatever may have been the teaching in Berlin and other places abroad, I can safely state that such a view has not been held in the British Isles by any teacher whose clinical experience of diphtheria has been at all extensive. The changes that have been observed, and rarely observed, by microscopical examination of the brain in human diphtheria have been regarded by clinical observers as of little or no significance in respect of the symptoms and course of the disease. Cerebral symptoms are very rare in diphtheria.

The other statement is that "the pathological changes of the vascular system have *now* become the central problem in the pathogenesis of diphtheria" (p. 777; the italics are mine). Again, that may be so in Berlin and elsewhere. But the primary importance of these changes has been recognised in this country for many years. Fourteen years ago Dr. Esther Harding published her book, alluded to by Dr. Friedemann and Dr. Elkeles, "The Circulatory Failure in Diphtheria," a work in my opinion of the highest value, and the more so because the conclusions Dr. Harding arrived at were the result of careful clinical observation of the disease in the human being. Lastly, may I be permitted to say that several years ago I wrote as follows: "The most important of the effects produced by the toxin of diphtheria are those which are to be observed in the circulation" ("A Text Book of Infectious Diseases," 1928, p. 163). Following Dr. Biernacki, Dr. Harding and others, and as the outcome of my own experience, I pointed out that the circulatory changes were chiefly peripheral.

I am, Sir, yours faithfully,

Hampstead, April 14th. E. W. GOODALL.

To the Editor of THE LANCET

SIR,—It is very difficult to reconcile Drs. Friedemann and Elkeles' views on the permeability of blood-brain barrier to diphtheria toxin with Kramer's work on ultra-filtration (Jour. Gen. Physiol., 1926, ix., 811). He showed that colloidal dyestuffs would only pass through a filter with the same charge. As all the present available evidence suggests that animal or vegetable membranes in neutral aqueous solution possess a negative charge, one would expect that, if the diphtheria toxin persists in the blood as a negatively charged colloid, it would pass through the capillary barrier, but Drs. Friedemann and Elkeles show that it does not. It has long been known that diphtheria toxin at the pH of the body fluid is an anion (Field and Teague, 1907), but what we do not know is what change the toxin undergoes in vivo after the characteristic incubation period. Some change must occur in the toxin in vivo to render it toxic. Drs. Friedemann and Elkeles' illustration of acid and basic dyes is not exactly comparable, as the negative anions of these acid dyes remain non-toxic and do not become toxic after an incubation period like diphtheria toxin. It is also known that diphtheria toxin rapidly disappears from the circulation and does not circulate unchanged for days as Germanin does. One would expect any colloid micelle or polyvalent metallic kation carrying a positive charge in vitro to be immediately toxic, owing to their powerful property of flocculating the negatively charged colloidal micelles of the organism in the blood or by their similar effects in destroying the capillary membrane, thus rendering them permeable to the toxin. The effect of the diphtheria toxin is more like that of some of the complex metallic compounds recently introduced into medicine (Allochrysine, Thiobismol, &c.) where the metal is a part of the complex anion. In these compounds the toxic heavy metal effects do not show themselves until after a long interval, presumably because of the ultimate decomposition of the complex anion with liberation of a positively charged metallic ion.

The writer has suggested that the ultimate effect of diphtheria toxin resembles that of a positively charged colloid (Med. Officer, Jan. 24th, 1931), owing to the resemblance of its effects to that of the absorption of polyvalent metallic kations (Pb, Hg, Au, Br, Sn, &c.)—namely, vomiting, albuminuria, circulatory failure, and late paralysis. The experimental evidence supporting this view was based on observations of certain colloid changes observed in the particles, probably lipoidal, rendered visible in the serum by dark-ground illumination. I showed that the injection of 20 per cent. of intravenous glucose (a reducing agent, or agent capable of donating electrons) and the administration of large doses of alkalis, which tend to alter the pH of the blood in an alkaline direction, and iodine, a foreign anion, had a beneficial effect in the prevention and treatment of the circu-

latory failure of diphtheria and the reduction of the percentage of severe late paralysis. If Drs. Friedemann and Elkeles' views are right, these agents should make the patient worse. Our methods have been used on 3200 cases of diphtheria with a death-rate of 2·9 per cent., although many hypertoxic cases are still occurring in Bristol. These results would seem to support our views.

I am, Sir, yours faithfully,

B. A. PETERS, M.D. Cantab.

Ham Green Hospital and Sanatorium, April 17th.

HUMAN BLOOD-SERUM FOR SEPTICÆMIA

To the Editor of THE LANCET

SIR,—In reference to the contribution by Dr. Lazarus-Barlow and Dr. Chamberlain on the value of human blood-serum in septicæmia, which appears in THE LANCET of March 10th, one is led to infer that the authors are not acquainted with the previous literature on the subject. In a paper entitled "Complement in Health and Disease" (Canad. Med. Assoc. Jour., April, 1926), the use of human blood-serum in septicæmia is described and experimental evidence submitted why it should be used in these cases. The subject was amplified in two further papers, "A Method of Serum Therapy for Septicæmia" (ibid., July, 1928), and "Some Immunological Problems in Septicæmia" (Brit. Med. Jour., Sept. 20th, 1930). References to the method described in these papers have appeared at intervals in THE LANCET and other journals, and in a thorough discussion of the special methods adopted in treating septicæmia (Jour. Lab. and Clin. Med., April, 1931) Dr. J. A. Kolmer reviews this specific method.

The favourable results noted by Dr. Lazarus-Barlow and Dr. Chamberlain are in agreement with the beneficial results noted in a more extensive series of cases and described in the above-mentioned papers.

I am, Sir, yours faithfully,

Winnipeg, March 29th. FRED T. CADHAM.

TOBACCO SMOKING AND DUODENAL ULCER

To the Editor of THE LANCET

SIR,—Referring to Dr. O. A. Trowell's inquiry (published in your last issue, p. 808) into the relation of tobacco smoking to the incidence of chronic duodenal ulcer, it appears that a factor of some consequence has been ignored. The smoker of cigarettes swallows tobacco dust with his saliva and an infusion of tobacco is brewed in his stomach. If he has taken food recently the poisons in the infusion are diluted and to some extent they are decomposed into simpler and less harmful compounds by the digestive juices. Cigarette smoking before breakfast is particularly hurtful because the infusion is concentrated and poisons the gastric mucosa to such an extent that there is some paralysis of the cells which secrete the digestive juices. There follows little digestion of the poisonous infusion and impaired digestion of the succeeding meal.

I should like to see the whole question reopened with full statistical honours and with special reference to the relation of cigarette smoking before breakfast to the incidence of chronic duodenal ulcer.

I am, Sir, yours faithfully,

London, S.W., April 15th. S. G. ASKEY.

*** We regret that in some copies of the issue two figures dropped out of Dr. Trowell's Table II. The standard deviation to the average 12·0 cigarettes per day should read ±0·82.—ED. L.

HYPNOTISM

To the Editor of THE LANCET

SIR,—In your notice of my last book, "Hypnotism—the Friend of Man," you stated that I have therein represented hypnotism as an "universal panacea." In the first article which I wrote (after nine years' investigation and experimentation) on hypnotism, I remarked: "To pretend to cure all, or nearly all, complaints by hypnotism is sheer quackery" (Weekly Times and Echo, Oct. 29th, 1911). In my book entitled "Rational Hypnotism" (published in 1914) I stressed the same fact; and in "Hypnotism—the Friend of Man" I wrote: "There are some cases wherein hypnotism, even if backed by the most skilful of other treatment, is powerless, or only of use for the alleviation of coincident and aggravating troubles." What I claimed especially with regard to hypnotism is that, in view of the mental factor in complaints, "there are extremely few cases of disease or disability in which the employment of hypnotism is counter-indicated." And therein I had the support of various leading qualified practitioners.

I am, Sir, yours faithfully,

J. LOUIS ORTON.

Hawthorn Drive, Uxbridge, April 12th.

*** Mr. Orton's quotation gives the clue to our reviewer's remark.—ED. L.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

THE following appointment has been made: Surg. Comdr. N. A. H. Barlow to *Victory*, for R.N.B.

ROYAL NAVAL VOLUNTEER RESERVE

Proby. Surg. Lt. P. C. Lewis to be Surg. Lt.
Surg. Sub-Lt. G. F. Jones to be Surg. Lt.

ARMY MEDICAL SERVICE

Col. C. D. Myles, late R.A.M.C., retires on retd. pay.
Lt.-Col. & Bt. Col. G. S. Wallace, from R.A.M.C., to be Col.

ROYAL ARMY MEDICAL CORPS

Maj. R. C. Paris to be Lt.-Col.
Maj. & Bt. Lt.-Col. O. W. McSheehy to be Lt.-Col.

TERRITORIAL ARMY

Capt. J. K. Rennie resigns his commn. and retains his rank, with permission to wear the prescribed uniform.

ROYAL AIR FORCE

Flight Lt. T. V. O'Brien is promoted to the rank of Squadron Leader.

Flying Offr. W. Hall is promoted to the rank of Flight Lt.

Dental Branch.—Flying Offr. V. H. Weeks is promoted to the rank of Flight Lt.

CHARING CROSS HOSPITAL.—The report for 1933 states that the expenditure had, by rigid economy, been reduced from £67,674 to £66,590. The income was £71,877. There was a considerable increase in out-patients and casualty cases—the former exceeded 95,000; the latter numbered nearly 40,000. There were 5259 in-patients, and 2951 major operations were performed. The immediate programme comprises, besides the erection of another block of the nurses' hostel at Hampstead, the provision of paying wards in the hospital, the removal of the kitchens from the basement to the top floor, and the conversion of the basement for the use of physicians, surgeons, and specialists. At the recent annual meeting Mr. George Verity, the chairman, stated that the first step in the programme was made possible by the munificent generosity of the vice-chairman, Mr. J. S. Elias.

OBITUARY

FRANCES MAY DICKINSON BERRY, M.D., B.S. Lond.

WE regret to announce the death of Lady Berry, the wife of Sir James Berry, F.R.C.S., which occurred on Sunday, April 15th, at her home, Bramblebury, near Wendover.

Dr. Frances May Dickinson Berry was the daughter of Mr. Sebastian Dickinson, formerly M.P. for Stroud, and the sister of Sir Willoughby (now Lord) Dickinson. Born in 1857 she was educated at home, save for one year in Dresden, and studied medicine at the School of Medicine for Women attached to the Royal Free Hospital. She graduated with the M.B. degree in 1889, and two years later married Mr. (now Sir) James Berry. In 1892 she proceeded to the M.D. degree, and after post-graduate work in Vienna held resident appointments at the Belgrave Hospital for Children and the New Hospital for Women. In 1895 she took the B.S. degree, with honours, and for a time was assistant medical officer for education purposes to the London County Council. She then decided to practise as an anæsthetist, and held appointments as anæsthetist at the Royal Free Hospital and the Alexandra Hospital for Children.

LADY BERRY

[Photograph by Elliott and Fry.

The war brought Sir James Berry and his wife into well-deserved prominence for their distinguished Red Cross work in Serbia. Both of them had been for years keen travellers, and their annual holidays had been spent bicycling in, among European countries, Serbia, Dalmatia, and the Danubian districts, as well as in North Africa. When, therefore, the Royal Free Hospital established a Red Cross Unit in Serbia they were especially fitted by acquaintance with the country and with the manners of the inhabitants to take charge of the adventure. The experiences in surgery and epidemiology with which the Anglo-Serbian Hospital Unit met were various, and the practical difficulties to be surmounted were great. The story was later set out in a book by Lady Berry and her husband, with the assistance of other members of the Unit, where beneath the picture drawn we discern the courage and resourcefulness shown by the leaders. The Anglo-Serbian Unit arrived in Serbia in 1915 and found that their first work would be to instil some rudiments of hygienic method into the minds of the people, who were, as the authors said, "living on mud floors, disliking fresh air, suffering much from tuberculosis and diphtheria, careless about water-supply, and horribly tormented with worms." Into such a population, already suffering from war and imminently threatened with invasion, it was a great exploit to introduce the doctrines of sanitation. There was, however, at first little fighting, and early successes had resulted in Austrian prisoners. The work of these in collaboration with that of the Serbians led to the establishment of a rough-and-ready system of hygiene, as can be gathered from the book which gave a cheerful picture of an experiment in international amity. But within a year the Austrian invasion proved victorious and the Anglo-Serbian Hospital Unit was captured. Berry and his wife were treated with great consideration and subsequently took a British Red Cross Unit to Rumania, where their work again testified to their energy and enthusiasm.

At the end of the war Lady Berry for a time resumed her professional activities, while she served as president of the Medical Women's Federation, but of late years she and her husband have lived in retirement at their house near Wendover. She had been ailing for some two months, but latterly had manifested improvement. At the end of last week she had a sudden relapse, and died of pneumonia within 48 hours.

CECIL WILLIAM CUNNINGTON, M.R.C.S., D.P.H. Camb.

THE death is announced at his residence in Kilburn of Dr. Cecil William Cunnington, a well-known practitioner in the Hampstead and Kilburn districts. Born in 1855 he received his medical training at King's College Hospital, where he was a successful student and Warneford Scholar, and became an Associate of the College. He passed the intermediate M.B. Lond. examination, but went no further towards graduation, taking the M.R.C.S. Eng. in 1883. He held various resident appointments, and was for a time house surgeon at the Royal Free Hospital, and some forty years ago commenced practice in the neighbourhood where he died. Dr. Cunnington's local activities were great. He early became a member of the Hampstead vestry, secured a seat on the borough council on its formation, and later became an alderman. He served on many district committees, showing special interest not only in hygienic matters but in the maintenance of libraries and the preservation of open spaces. The public concern at his death was displayed by the large congregation assembled at the funeral.

THE LATE DR. STANLEY MELVILLE

Dr. ARTHUR G. PHEAR writes: "May I be allowed to supplement your memoir of Stanley Melville by a reference to his love of flowers, gardens, and music? On the occasions of our visits to the Royal National Hospital at Ventnor it has been my privilege to play truant with him from the business of the board room and to wander through the grounds with the gardener, who delighted in displaying his special treasures to so congenial and appreciative a companion. He was intensely devoted to music and though, owing to his disability, he was debarred from performing himself, he took a keen and critical interest in the works of the older composers, and would comment on the solace and refreshment he derived from listening to the music of Bach, specially when played on the clavichord. It may not be out of place in this connexion to pay a tribute to the exquisite music provided by the organist and boys of the choir at the memorial service at All Saints, Margaret-street. Nothing could have been more perfect in itself, or more appropriate to the occasion. Mr. Vale, the organist, was a close friend of Stanley Melville, and the singers were undoubtedly expressing a sense of personal loss."

PANEL AND CONTRACT PRACTICE

A Review of National Health Insurance

IT was enterprising of the Blackburn insurance committee to ask Sir George Newman to address insurance doctors and chemists at a local celebration of 21 years of health insurance, and to make his remarks on this occasion available to a wider audience. Sir George recalled that when the Health Insurance Bill was proposed in 1910 they were told there were three fatal blemishes in it: first the scheme was too expensive to be profitable; secondly the doctors would not coöperate, and if they did they would be an inferior part of the profession whose treatment would be perfunctory and inadequate; thirdly as many of the insured persons desired to be exempted, only those would be in it who wanted something for nothing. Within 20 years these fears had proved to be substantially false. It was Emerson who said:—

> "The lesson of life is to learn to put the meaning of the centuries and of the years over against the meaning of the days and hours."

Looking back after years or centuries, said Sir George, we could see the trend of men's work. More than 800 years ago the guilds—religious, merchant and craft—were with the manors and monasteries a means of coöperative defence against physical disability. The guilds were followed by the friendly society and the trade-union, with the result that to-day we live in the Golden Age of state assistance and coöperation. Between the Feeding of School Children Act of 1906 and the Local Government Act of 1929, Parliament enacted ten measures dealing with different kinds of social insurance. In little more than a generation the public health service had turned from reform of environment to reform of personal health, in fulfilment of Edmund Burke's splendid vision, "A working partnership between those who govern and those who are governed."

From the records of sickness of 16 million insured persons we had learned that about half the working population suffer from sickness in some form during the year; that 20 per cent. of those who claim sickness benefit do so on account of bronchitis pneumonia, or other respiratory disease, 13 per cent on account of indigestion or diseases of alimentary tract, 10 per cent. on account of rheumatic troubles, and a like number of injuries, accidents, and septic wounds. These four conditions accounted for more than half of the non-infectious sickness of the English people; plus the infective diseases they constituted the common enemy of the nation, more wasteful in time, money, and life than all the industrial strikes put together. After alluding to the steady decline in disease and increase in expectation of life, Sir George spoke of the immense advantage of health insurance in removing the chief deterrent of early and effective treatment. The insurance principle was, he said, a grand system of education for the people in the art of living. It was inconceivable that eight million persons should every year seek advice from their doctor without learning something about the avoidance and prevention of sickness; the doctor inquired into causation because it paid him best for his patient not to be ill. There was of course some imperfect work—this being an imperfect world, human beings were not infallible—but taken as a whole it was a system which gave half the adult population the inestimable advantage of coöperative medicine, not only under supervision of the contracting parties, medical and lay, but so designed as to meet the needs, both real and fanciful, of the insured person.

In this interesting address Sir George Newman was no doubt right in emphasising the freedom of the insured person from financial anxiety in case of illness as one of the greatest assets of national health insurance. It is curious how little the logic of this fact is brought home to the insured population. Insurance practitioners constantly hear their patients complain that they only have the insurance money coming in to live on. Is it not rather surprising that the majority of working men seem content to insure only through the Act for its ordinary benefit, and rarely, if ever, increase the amount payable weekly through the voluntary side of the approved society.

PUBLIC HEALTH

Puerperal Sepsis

A CIRCULAR letter dated April 13th from the Ministry of Health calls the attention of medical officers of health to the discontinuance of an arrangement for the bacteriological investigation of puerperal sepsis. The Departmental Committee on Maternal Mortality was so much impressed by the number of fatal cases of puerperal sepsis in which no source of infection had been traced that it suggested immediate steps to define the responsibility of the throat carrier and of infective conditions in persons in contact with the patient. By arrangement between the Ministry of Health and the Medical Research Council the services of a full-time bacteriologist were made available and Dr. Dora Colebrook was appointed by the Council and began work on Jan. 1st, 1932, in the new laboratories of Queen Charlotte's Hospital at Hammersmith. Her results show that certain puerperal fever cases are infected by a strain of *Streptococcus pyogenes* identical with that obtained from the respiratory tract of the doctor or nurse attending them; that in other cases the infecting strain is identical with that obtained from the patient's respiratory tract; that in a third group the strain is identical with those obtained from the respiratory tract both of the patient and of a contact. Cases of the last type are not very uncommon and allow of no decision as to the source of the infecting strain. Dr. Dora Colebrook's work continues although no longer in association with the Ministry of Health.

Opening a discussion last summer at the Dublin B.M.A. meeting, Dr. Leonard Colebrook said that in a group of 57 women admitted to Queen Charlotte's for puerperal infection by *S. pyogenes*, 12 per cent. were carrying these cocci in the nose only. Available data, he said, indicated that nose carriers of hæmolytic streptococci number no less than 4 per cent. of normal individuals in London during the spring. He spoke of a nurse working in a maternity hospital where cases of puerperal sepsis had been occurring sporadically for two years. This nurse had a slight discharge from her nose after an operation on the antrum two years previously, and this discharge was full of hæmolytic streptococci. The last case of puerperal infection sent to Queen Charlotte's was found to have a strain of streptococcus identical with that from the nurse's nose. Dr. Colebrook concluded that from his experience there are many sources of streptococcal infection: it may come from the mother herself, from another septic case, or from the nose or throat

of someone attending her. It is too often overlooked, he remarked, that infection may come from some member of the household who is not present at the confinement—e.g., the husband with a sore-throat or a septic wound of his hand, the child with impetigo, a discharging ear, or a post-scarlatinal nose infection. Infective material from one of these sources may have contaminated a towel used by the midwife after washing her hands.

In an earlier letter to M.O.H.'s Sir George Newman pointed out that administrative difficulties not infrequently arise from bacteriological uncertainty about the strains of streptococcus in a particular case and a number of agglutinating sera available for the purpose has been steadily accumulating. These serums are available at the Ministry of Health for the rapid identification of strains. Although the arrangement with the Medical Research Council is now to cease, the value of bacteriological investigation in the problems which confront the medical officer of health in relation to the conduct of maternity homes and the suspension of midwives is still evident. The circular letter hopes that the M.O.H. will take every opportunity to obtain assistance on these points from bacteriologists attached to adequately equipped local laboratories. The M.O.H. desirous of obtaining the help of the Ministry can still do so by forwarding a short report of the cases of infection which have occurred and the bacteriological results, if any, which have been obtained.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 7TH, 1934

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 6 (last week 3); scarlet fever, 2613; diphtheria, 1059; enteric fever, 11; acute pneumonia (primary or influenzal), 1404; puerperal fever, 55; puerperal pyrexia, 128; cerebro-spinal fever, 26; acute poliomyelitis, 2; encephalitis lethargica, 6; dysentery, 3; ophthalmia neonatorum, 68. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on April 16th–17th was as follows: Small-pox, 1 under treatment, 7 under observation (last week 11 and 1 respectively); scarlet fever, 1651; diphtheria, 1725; measles, 3648 (last week 3670); whooping-cough, 311; puerperal fever, 30 mothers (plus 10 babies); encephalitis lethargica, 258; poliomyelitis, 4; "other diseases," 101. At St. Margaret's Hospital there were 13 babies (plus 7 mothers, with ophthalmia neonatorum).

Deaths.—In 118 great towns, including London, there was no death from small-pox, 3 (0) from enteric fever, 162 (59) from measles, 12 (0) from scarlet fever, 51 (11) from whooping-cough, 49 (15) from diphtheria, 40 (10) from diarrhœa and enteritis under two years, and 89 (21) from influenza. The figures in parentheses are those for London itself.

Measles remains substantially unchanged, the figures for the last few weeks, working backwards, being 162, 153, 187, 157, 141, 130, 119, 110, 78. This week there were 18 fatal cases in Liverpool, 14 in Middlesbrough, 9 in Newcastle-on-Tyne, 7 in West Ham, 6 in Barnsley, 4 in Salford, and Stoke-on-Trent. The deaths from measles so far during the present year number 1506, compared with 459 during a similar period last year.

Willesden, Dewsbury, and Oldham each reported one death from enteric fever. Whooping-cough caused 6 deaths in Liverpool, 5 each in Salford and Sheffield, 4 in Birmingham. Five deaths from diphtheria were reported from Liverpool. Fatal cases of influenza were widely distributed among 42 great towns, the highest number of deaths being reported from Birmingham 6, Liverpool 5, Willesden, Hastings, Portsmouth, Southampton, Newcastle-on-Tyne, Sunderland, each 3.

The number of stillbirths notified during the week was 291 (corresponding to a rate of 44 per 1000 total births), including 47 in London.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Road Traffic Bill

MINISTER'S DEFENCE OF HIS PROPOSALS

IN the House of Commons on April 10th Mr. OLIVER STANLEY (Minister of Transport) moved the second reading of the Road Traffic Bill. He said that the problem of road accidents was one the gravity of which could not be exaggerated. He doubted, however, whether even now the general public were really alive to the terrible extent of the fatalities and accidents.

He wondered, for instance, whether the ordinary man realised that between that time (3.30 P.M.) and 11 P.M. when the Speaker would put the question that this Bill be read a second time, on the basis of the law of averages, 180 people would have met with an injury on the roads of this country.

The Bill was a proposal which the Government made for dealing, as far as any form of Statute could deal with this particular problem. There was a school of thought which said that there was no need to worry about restrictions, no need for users of the road to put up with anything, if only enough money was spent on the roads. He believed that to be dangerous nonsense. A great deal of time and ingenuity as well as money could be spent upon the roads, but in the end the roads would only be made safer, but not safe. Ignorance and folly could kill a man just as surely on a modern by-pass as on an old country road. He did not believe there was any possibility of finding any real solution of this problem unless all of them were prepared to bear burdens themselves, as well as impose burdens on others, and unless all of them were prepared in some degree to subordinate their personal convenience and desires to the general need of public security. This Bill was only a part and not necessarily by any means the most important part, of the action they would have to take if this problem of road accidents was to be solved.

The four principal proposals of the Bill, said Mr. Stanley, were a speed limit of 30 miles per hour in built-up areas, a test for new drivers, the establishment of pedestrian crossings, and amendments in the law of compulsory insurance. Looking back on the last four years they had to admit that the hopes which were then entertained of a reduction in the numbers of killed and injured on the roads had largely been falsified. Unfortunately in the last 18 months there had been unmistakable signs of a growth in the number of accidents, and because of that fact they had to survey the field once again. One heard many arguments as to speed being the important factor in accidents. Most people would agree that as a factor in accidents speed was only relative; but they must all agree that speed reduced the driver's power to deal with the unexpected. It was in the built-up areas that 75 per cent. of the deaths of pedestrians occurred. Pedestrians made up more than half of the total of people killed on the roads and about half of the pedestrians were children and old people. He asked hon. Members not to be led away by the argument that this Bill was a return to the old speed limit. This new proposal was quite different. The former speed limit failed because it did not accord with the view of reasonable people.

TESTS FOR DRIVERS

In regard to tests for drivers, it was true that a certain number of people would be unable to pass the test at all. There would be some whose physical condition would prevent them, some whose reactions were so slow and whose judgment was so bad that

they were better off the roads; but the general run of people would eventually pass the test.

With regard to the machinery of the test he intended to approach at once the motor organisations. They had expressed complete hostility to this particular provision, but he would appeal to them to coöperate in setting up machinery for carrying out these tests. Of course, if they refused that was their business. There were alternative methods which could easily be adopted. The Bill gave power to the magistrates in case of a conviction for careless or dangerous driving to suspend the motorist's licence until he passed the test. Drivers of heavy vehicles would be required to obtain a special licence enabling them to drive that particular class of vehicle.

The decrease in fatal accidents as a result of the experiment of pedestrian crossings in the Department of the Seine in France had been so remarkable that he felt that he could not overlook the possibility of such an experiment in this country. As regarded the question of insurance, under the new provisions contained in the Bill the insurance company would become liable on their policy as soon as the injured person secured a judgment, if the car was being used within the terms of the policy. It would then be for the insurance company if they wished to repudiate to get the declaration from the court saying that they were entitled so to do, and they would only be able to get that declaration on the ground of non-disclosure of material facts. It shifted the onus in this case from the injured person to the insurance company.

THE PSYCHOLOGICAL ASPECT

Sir ERNEST GRAHAM-LITTLE said he would restrict his intervention entirely to the medical and psychological aspects of the problem. The medical profession had a long experience of accidents, and while attention was confined to mechanical factors progress was slow, but when attention was directed to the human factor the improvement was immediate. It was to the neglect of the human factor in this Bill that he wished to draw attention, and he urged the Minister to realise the importance of including a medical test as well as a test of competence in driving. It was possible to make a discrimination between drivers who were likely to be mischievous and those who were not, and the tests, as was so often the case, were largely ignored in this country while they were adopted very much more widely in other countries. Their practical utility might, he thought, be conveniently gauged by some figures published two or three weeks ago in Paris by one of the most eminent psychologists in the world.

These figures showed that the frequency of accidents caused by taxis, private cars, and lorries between 1921 and 1932 increased by 145 per cent. A series of figures for the corresponding year furnished by the General Transport Company of Paris, which was responsible for the omnibuses and trams of that city, showed that the accidents due to collision were reduced by more than 30 per cent. and the gain to the company following these tests reached an average of 1,500,000 francs a year.

Somewhat similar figures were furnished in the case of some companies in America. In the Street Railway Omnibus Service of the Boston Elevated Railway accidents were reduced by 35 per cent. The figures in the case of the Milwaukee Electric Railway were reduced from 14·1 to 0·6 per cent. in a year.

The test, Sir Ernest continued, did more than reduce the rate of accidents. It sorted out the drivers who were likely to be mischievous from those who were not, and the register of selected persons fell to something like 3 per cent. where it had previously been 20 per cent. The saving in the cost of the wear and tear of vehicles again represented a very large sum. He was sure that an advance would be better made by following along the line of medical science, and he was equally sure that much of the accident-rate was caused by essential ignorance of quite simple biological facts on the part of motorists.

It was not perhaps, sufficiently realised that the time occupied in making a decision might make all the difference between a fatal accident and an escape. That was tested very carefully in a group of drivers, and it was found that the best driver gained a half per cent. as compared with the less experienced and less capable driver. That meant a saving of 30 ft. He could pull up at 30 miles an hour within a distance of 30 ft. less than the man whose reaction time was a second longer. The reaction time could be decreased. A decision could be retarded by a large number of quite innocent acts. A heavy dinner, a glass of beer, inattention, fatigue—all these unconscious factors might influence that very important circumstance.

The Bill could, he thought, be improved by paying some attention to the human factor which was aptly demonstrated by statistics to be responsible for a large proportion of accidents.

Sir CHARLES OMAN said that there was a great deal to be said in praise of the Minister's proposed tests and examinations for motorists. He thought that the arguments produced against the proposal had been unconvincing. There was only one thing he would like to add, and that was a medical examination. Only a few weeks ago an epileptic motorist charged into a dense crowd watching the King drive away and killed four people. If that motorist had presented himself before a doctor he would probably have been detected. A person who was actually a drug-taker, or was showing signs of being a habitual drunkard, would also be detected by a medical man. The only thing that was wanted in addition to the tests proposed in the Bill was that there should not only be a test of driving but a doctor who, at the lowest possible fee, would say that the applicant for a licence was physically and mentally capable.

PAYMENT FOR EMERGENCY TREATMENT

Dr. HOWITT said he welcomed the Bill because he believed that immediate legislation was necessary if the appalling casualties on the roads were to be reduced. The Minister was aware that many members of the House were anxious that the Bill should include a provision embodying the principle of Lord Moynihan's Road Traffic (Emergency Treatment) Bill which had passed through all its stages in the House of Lords. That Bill made provision for remuneration of registered medical practitioners and hospitals for emergency treatment only. Hospitals and medical men were thoroughly dissatisfied to-day with their remuneration for such emergency treatment, and their dissatisfaction was shared by people all over the country. It was not right that emergency treatment should be given by hospitals and doctors and not be paid for. Everybody would agree that family doctors were very hard-working men who were not particularly wealthy or over-paid. The lives of many of these doctors were rendered miserable to-day by casualties on the main roads. He was afraid that a lot of medical men had had to give up their houses on or near main roads because they were being perpetually called out on Sundays and were losing money, just as was the case in regard to the hospitals, in connexion with the supply of bandages and splints. They practically never got a penny of remuneration or one subsequent word of thanks. He did not think that the reason for this was sheer ingratitude on the part of the patients, but a fear of the law if they got into communication with the doctor. They feared that if they paid anything they were putting themselves in a false legal position. The difficulty was how the contribution to hospitals and medical men for emergency treatment was to be found. After a great deal of discussion the conclusion had been arrived at that a very slight increase in the premium for compulsory insurance for third-party risks would cover emergency treatment by doctors and hospitals. The cost of the extra premium would be very small.

Mr. MCKEAG said that Dr. Howitt had mentioned a real grievance which he felt sure that the Minister of Health would do his best to meet, and in regard to which he thought that Dr. Howitt would have the support of the majority of Members if he raised the matter in Committee.

Mr. LOVAT-FRASER begged the Minister of Transport to deal with the horrible, shrieking motor-horns in

use at present. He said that they were thoroughly bad for the nerves, and were becoming more numerous.

JUSTICE TO HOSPITALS

Mr. STOREY said that the greatest blot on the Bill was that it did nothing to secure justice for the voluntary hospitals, and left on their shoulders a very heavy burden due to the cost of treatment of road accidents. The Minister of Transport had reminded the House that between the time he was speaking that afternoon and 11 o'clock that night 180 persons would be injured on the roads, but he had not reminded them that those cases would be treated by the hospitals which would not be able to recover more than one-half of the cost.

The House would recall that before the 1930 Act was passed it was estimated that road accident cases cost voluntary hospitals no less than £230,000 per annum, and of that sum the hospitals were only able to recover some £26,000. The House might not realise, however, that although the 1930 Act made provision for hospitals to recover up to £25 where negligence could be proved against the driver it utterly failed in every way to do justice to the hospitals. In 1931 it was estimated that road accidents still cost the voluntary hospitals of the country £230,000, but they were only able to recover £34,000. It was true that there were outstanding claims of some £58,000, but anyone who knew how difficult it was to recover those sums would realise that such claims were very doubtful assets indeed. It was very difficult to maintain voluntary hospitals at the present time, particularly in distressed areas, where contributions were made in small sums of 1*d.* or 2*d.* a week from working-class people; and it was quite wrong that those who had subscribed this money should have to wait for treatment owing to the pressure on the hospitals due to road accidents.

Mr. Storey suggested that a charge should be made on the Road Fund to meet cases of this kind, and that the money should be paid to some central body which would recoup the voluntary hospitals for their charges, the hospitals making over to that body any right they might have against any driver who had been proved to be negligent. He hoped that the Minister during the Committee stage of the Bill would seize the opportunity of doing justice to the voluntary hospitals. The voluntary hospital system was an asset which this country and the House should do everything to support.

THE GOVERNMENT'S REPLY

Lieut.-Colonel HEADLAM (Parliamentary Secretary to the Ministry of Transport), replying to the debate, said there was no intention of re-establishing a general speed limit for private cars such as existed before 1921. It was, however, perfectly clear that the larger number of accidents taking place at present occurred on roads in built-up areas. So long as that was the case it was desirable to make it less likely that accidents of that kind should occur. The Government thought that by imposing a speed limit in built-up areas no serious hardship would be imposed on motorists. The real point of the Bill was not that the Government hoped by it to do away with all the accidents and troubles on the roads at present, but that its effect would be to reduce accidents and inculcate in the people of the country the necessity for care and caution on the roads. The Minister was ready to consider in Committee any suggestions by Members for the improvement of the Bill. Matters such as those concerning the hospitals and the doctors could well be considered in Committee.

The Budget Statement

In the House of Commons on Tuesday, April 17th, Mr. CHAMBERLAIN, Chancellor of the Exchequer, made his annual Budget statement. He said that a year ago he had to report a deficit of just over £32,000,000; this year he was able to announce a surplus of £31,147,860. The revenue receipts had exceeded the estimate by £25·8 millions. Of this Customs and Excise had contributed £17,000,000. Income-tax at £229,000,000 and surtax at £52,500,000 were within 0·7 per cent. of the estimate.

Mr. Chamberlain announced that the general preference on all colonial sugar reaching the United Kingdom would be reduced to the old rate of approximately 3*s.* 9*d.* per cwt. The additional quota preference of 1*s.* per cwt. would be replaced by a new quota preference of 3*s.* per cwt. on a fixed quantity of 360,000 tons per annum. This provision would remain in operation for three years.

As from Jan. 1st next the present motor vehicles tax of £1 per horse-power would be reduced by 25 per cent. to 15*s.* per horse-power. There would be a corresponding reduction in the duties payable on motor cycles. The cost of this reduction would be £2,200,000 in 1934–35 and £4,000,000 in a full year. Under the existing law this loss would be borne as to two-thirds by the Road Fund and as to one-third by the Exchequer. Special arrangements would be made under which the Exchequer share of the duties on private vehicles (normally one-third) would be subject this year to a minimum of £5,000,000. The fee of 10*s.* or 5*s.*, as the case might be, charged since 1924 for the surrender of licences, would be abolished.

Dealing with the manner in which he proposed to deal with the Budget surplus Mr. Chamberlain said that one-half of the cuts in salaries made in 1931 would be restored as from July 1st. Excluding the unemployed, the cost of this provision to the Exchequer in a full year would be £5,500,000, and in the current year £4,000,000. The whole of the cuts in unemployment benefit would be restored. On the assumption that the Unemployment Bill would become law by the end of June next the new rates of benefit would take effect as from July 1st next. There would be a corresponding alteration in the rates of transitional payments (where the needs of applicants required it) and £3,600,000 would be allowed for this in the current year. The cost of the restoration of the 10 per cent. cut in unemployment benefit was estimated at £4·8 millions in a full year. These proposals left a surplus of £21·3 millions.

Out of the £81,500,000 of extra taxation imposed in 1931 the income-tax payers found no less than £57,500,000, or 70 per cent. Although their burdens were already heavy, the income-tax payers had shouldered an extra 6*d.* on the standard rate of tax, there had been a general reduction in allowances, and a surtax of 10 per cent. on the larger incomes. Moreover, all these increases of taxation took effect from April, whereas the cuts only became operative in the autumn. It must not be forgotten that since 1931 many income-tax payers had also suffered a further serious reduction in their incomes owing to the operation of the conversion loan. The case for some remission was therefore overwhelming. The only question was as to what form the remission should take. In deciding the form he thought he ought to consider the effect of any remission, not merely on the individual taxpayer, but upon the country as a whole. He had come to the conclusion that the relief which would confer the most direct benefit on the country, which would have the greatest psychological effect, and which would impart the most immediate and vigorous stimulus to trade and employment, would be a reduction in the standard rate of income-tax. Accordingly he proposed to remove the 6*d.* imposed in 1931 at a cost of £20,500,000 this year and £24,000,000 in a full year.

Summarising the Budget, Mr. Chamberlain said that the final balance showed an estimated revenue for 1934–35 of £706,500,000 and an estimated expenditure of £705,700,000, leaving a prospective margin of £800,000.

HOUSE OF COMMONS

THURSDAY, APRIL 12TH

Woman's Detention in Mental Ward

Mr. PIKE asked the Minister of Health whether his attention had been called to the circumstances attending the death of Mary Hedley, aged 60 years, a married woman, of New-street, Sheffield; and if it was the intention of His Majesty's Government to institute inquiries into the operation of the Lunacy Acts with a view to ensuring that certificates declaring persons to be of unsound mind

should not be issued until indisputable medical evidence had been established.—Sir HILTON YOUNG replied: There is, I think, some misapprehension about the facts of this case. It appears from the press report of it that, on the strength of a medical certificate from the district medical officer describing this woman's condition as "bronchitis and unsound mind," she was removed by the general relieving officer to the hospital under the provisions of Section 20 of the Lunacy Act with a view to her being kept under observation in the mental ward. The patient died there before any question of further formal proceedings for certification under the Lunacy Act arose and she was never certified. In these circumstances, there is no case for inquiry into the operation of the Lunacy Act.

Mr. PIKE: Does not the right hon. gentleman think that in view of the present circumstances which permit an officer of a public assistance committee to issue an order for detention in a mental ward, no person should be admitted as a mental case until there has been a thorough medical inquiry and the mental condition of the person has been established?

Sir HILTON YOUNG: I do not think I can accept the suggestion which is contained in the hon. Member's supplementary question. He will see that in this particular case there was, as a matter of fact, no question of certification.

Provision of Meals for School-children.

Mr. THOMAS WILLIAMS asked the Parliamentary Secretary to the Board of Education if he would furnish a list showing those authorities which, under Sections 82 to 84 of the Education Act, 1921, provided meals, respectively, only on days when the school met, on days when the school met and Saturdays and Sundays, and on school days, Saturdays and Sundays, and during holidays.—Mr. RAMSBOTHAM replied: The answer is as follows: The preparation of a complete statement containing the information required would involve the expenditure of a disproportionate amount of time and labour. The following table gives a summary, by types of local education authority, of the periods during which school meals are provided in the different areas.

Days per week on which meals are provided.	Number of local education authorities.			
	Counties.	Non-county boroughs.	Urban districts.	County boroughs.
7 days and holidays	—	2	—	4
7 ,, not ,,	—	—	—	1
6 ,, and ,,	1	9	7	18
6 ,, not ,,	—	—	1	—
5 ,, and ,,	4	13	8	21
5 ,, not ,,	8	23	8	16
5 ,, a week * ..	3	8	2	8
Miscellaneous case †	—	3	1	5

* In these areas it appears that feeding is not continued during the holidays, but the Board have no definite information.

† These include one county borough where breakfasts are provided on five days a week and holidays, and dinners on six days a week and holidays. In the remaining eight areas milk is given on five days a week and not in holiday periods, but other meals are provided in those areas as follows:—

2 boroughs ..	Cod-liver oil and malt and/or emulsions on	7
1 borough ..	Ordinary meals on ..	7
1 urban district	,, ,, ,, ..	6
2 county boroughs	,, ,, ,, ..	5
1 county borough	,, ,, ,, ..	6
1 ,, ,,	,, ,, ,, ..	7

} days a week and holidays.

Use of Dangerous Drugs for Slimming

Captain ERSKINE-BOLST asked the Home Secretary whether he had any information as to the time that would elapse before action was taken to place on the appropriate poisons schedule dinitro-phenols and dinitro-cresols, drugs the use of which for slimming purposes had proved fatal in several instances recently.—Sir J. GILMOUR replied: The steps necessary to add these drugs to Part I. of the existing Poisons Schedule have already been taken and notice to that effect will appear in to-morrow's *London Gazette*. The Statute requires that one month shall elapse from the date of the notice before the provision comes into effect.

India (Defence Forces' Medical Service)

Captain ELLISTON asked the Secretary to the Treasury whether he could report the result of consultations with the Government of India regarding the recommendations of the Warren Fisher Committee in reference to the Royal Army Medical Corps and other medical services of the defence forces.—Mr. HORE-BELISHA replied: Agreement has now been reached and the Government decisions on the recommendations of the Committee will be announced by the end of this month.

MONDAY APRIL 16TH

Pensions and Institutional Treatment

Mr. THORNE asked the Minister of Health if he was aware that, when a pensioner went into a hospital or institution which received grants from either the Government or the local authority in which the hospital or institution was situated, the pension inured to the State, and that no portion was paid to the local authorty or institution while the pensioner was an inmate; whether he had recently received any representations from local authorities asking for an alteration in this practice; and, if so, whether he had any intention of introducing legislation.—Mr. SHAKESPEARE (Parliamentary Secretary to the Ministry of Health) replied: As regards the first part of the question, the position is that under the provisions of the First Schedule to the Widows', Orphans' and Old Age Contributory Pensions Act, 1929, a pensioner who becomes an inmate of a poor-law institution, other than a pensioner who enters an institution for the purpose of obtaining medical or surgical treatment and continues to require such treatment, is disqualified for the receipt of a pension. There is no provision in the law for the transfer of any portion of the pension to the poor law authorities. As regards the second part of the question, I have received no representations recently in the sense suggested by the hon. Member and the last part of the question does not, therefore, arise.

Nursing Services in India

Dr. O'DONOVAN asked the Financial Secretary to the War Office if the Army Council considered British lady nurses of the Queen Alexandra's Military Nursing Service for India ineligible for appointment to the post of chief principal matron at Army headquarters, India; and if appointments to the post were to be confined, for the future, to British lady nurses of the Queen Alexandra's Imperial Military Nursing Service.—Sir S. HOARE replied: Members of both the British and the Indian nursing services are eligible for the post in question, and the appointment is made on the merits of the candidates from either service on each occasion.

TUESDAY, APRIL 17TH

Milk Tests in Scotland

Mr. LEONARD asked the Secretary of State for Scotland what action had been taken by the Scottish Milk Marketing Board to ensure that milk intended for liquid consumption should be adequately tested for the proper maintenance of a pure milk standard.—Sir GODFREY COLLINS replied: The Board have prescribed a minimum butter fat content standard of 3·4 per cent. The question of fixing a standard for cleanliness is engaging the attention of the Board.

Milk-supplies to School-children

Sir WILFRID SUGDEN asked the Parliamentary Secretary to the Board of Education the numbers of children in elementary schools in Essex and also in England and Wales who received during their attendance at school a tumbler of milk daily morning and/or afternoon; and what was the test of elimination whereby others in the same schools were not so supplied.—Mr. H. RAMSBOTHAM replied: The numbers of school-children in the geographical county of Essex, and in England and Wales as a whole, who were provided with milk by local education authorities during the month of February last, were 1363 and 184,493 respectively. In addition, it is estimated that about 21,000 school-children in the geographical county of Essex and 900,000 in England and Wales as a whole, receive milk daily under voluntary milk schemes administered by the National Milk Publicity Council. The selection of

children to receive milk depends on a variety of factors, such as, for example, the condition of the child, the willingness or unwillingness of the parents to pay where able to do so, or the willingness of the parent to allow the child to receive milk.

Slum Clearance

Sir PERCY HARRIS asked the Minister of Health in how many slum-clearance schemes had the work of clearance been actually commenced for the year ended March 31st, 1934, or the nearest available date; and how many persons therefrom had been actually rehoused.—Sir E. HILTON YOUNG replied: The number of clearance schemes, that is, confirmed orders or purchases by agreement in the course of the year ended March 31st last was 631, involving the demolition of 16,375 houses and the building of replacement houses for 73,718 persons, but I am not able to state the extent to which the work of clearance and rehousing had gone by the end of the year.

Disposal of London Refuse

Mr. MCENTEE asked the Minister of Health whether the advisory committee on London refuse had finished their work and reported; and, if so, would he state the nature of their report.—Sir E. HILTON YOUNG replied: I understand that the committee have completed their inspection of places where refuse is handled in the county, or disposed of outside the county, and also their inquiry into the collection and disposal of house refuse and the cleansing of streets and gullies in all but one of the city and metropolitan borough councils; and that the committee hope shortly to be able to submit a report in the first place with regard to the disposal of London refuse.

Health Insurance: Medical Benefit

Mr. THORNE asked the Minister of Health if he could state, owing to continued unemployment, at the end of December, 1933, the numbers of persons that had been denied medical benefit from their various approved societies.—Sir E. HILTON YOUNG replied: The returns which have now been received from approved societies indicate that the number of members who after a period of prolonged unemployment were continued in insurance during 1933 by virtue of section 1 (5) of the National Health and Contributory Pensions Act, 1932, but ceased to be entitled to medical benefit on 31st December last (though continuing to be insured for pensions purposes) is approximately 125,000. This number will, however, be substantially reduced by reinstatements to medical benefit, notifications of which are now being received from societies at the rate of several hundreds a week.

Small-pox at Blackburn

Mr. GROVES asked the Minister of Health whether the medical officers of the Ministry reported the form of small-pox recently notified at Blackburn to have been of the variola major or the variola minor type.—Sir HILTON YOUNG replied: I am advised that the recent outbreak of small-pox in Blackburn was an outbreak of variola major.

Mr. GROVES asked the Minister of Health how many cases of small-pox were wrongly diagnosed in connexion with the recent outbreak at Blackburn; and whether it was proposed to take proceedings against the medical attendant or attendants concerned for failing to notify these cases as small-pox.—Sir HILTON YOUNG replied: Four of the early cases were originally diagnosed as chicken-pox. The answer to the second part of the question is in the negative. An error in diagnosis does not constitute an offence under the Infectious Disease (Notification) Acts.

Mr. GROVES asked the Minister of Health whether he was aware that the first case which led to the recent outbreak of small-pox at Blackburn was a man employed at a cotton-mill where he handled cotton daily; and whether the evidence indicated that he contracted the disease in the performance of his duties.—Sir HILTON YOUNG replied: The answer to the first part of the question is in the affirmative. I have no satisfactory evidence on the second part.

MEDICAL NEWS

Royal College of Surgeons of England

At a meeting of the council held on April 12th, with Sir Holburt Waring, the president, in the chair, the Jacksonian prize for 1933 was awarded to Mr. Edgar Samuel John King, F.R.C.S., of Melbourne Hospital and Melbourne University, for his essay on the pathology, diagnosis, and treatment of localised rarefying changes in bones. A certificate of honourable mention for an essay on the same subject was awarded to Mr. H. Jackson Burrows, F.R.C.S., of St. Bartholomew's Hospital. The Jacksonian prize subject for 1934 is the pathology, diagnosis, and surgical treatment of the various forms of splenomegaly, and for 1935 the pathology, diagnosis, and treatment of intrathoracic new growths, excluding neoplasms of the œsophagus.

The John Hunter medal, with the triennial prize for 1931–33, was awarded to Dr. Dorothy S. Russell, of the London Hospital, for her work on the morbid histology of the kidney and brain.

Dr. G. A. Buckmaster (Bristol) and Mr. G. F. Stebbing (London), being members of 20 years' standing, were elected to the fellowship. Diplomas of membership were granted to T. S. Heslop (Manchester) and M. S. Shin (University College). Diplomas in tropical medicine and hygiene were granted jointly with the Royal College of Physicians to the following:—

A. C. Banerjee, P. P. Bhavnagri, S. A. B. Black, I. E. Direkze, V. L. Ferguson, Emily C. Greenfield, R. D. Harding, L. C. Mayne, K. S. Menon, T. H. L. Montgomery, M. G. Pradhan, H. A. F. Sallam, M. F. Seifi, F. J. Sladen, F. G. Smith, R. B. U. Somers, A. L. Stuart, T. H. Williams, Jayampathi Yatawara, and K. E. Yulil.

The regulations for examinership in anatomy were altered so that in future examiners in anatomy both for the fellowship and for the membership will be elected from persons holding a medical qualification in this country; previously only fellows examined in anatomy for the fellowship, and only fellows or members for the membership. Mr. F. M. Stent was appointed assistant secretary to the examining board in England.

University of London

Four lectures on the integration of the circulation will be given by Dr. R. J. S. McDowall, professor of physiology in the University, at King's College, Strand, W.C., on Thursdays, May 3rd, 10th, 17th, and 24th at 5 P.M. Admission is without ticket.

Eight lectures on the history of physiology are to be given at University College, Gower Street, W.C., by Dr. Charles Singer, professor of the history of medicine in the university, and Dr. K. J. Franklin, lecturer in physiology at Oriel College, Oxford. The first three, by Prof. Singer, will be at 5 P.M. on April 30th, and May 1st and 2nd, and the remainder, by Dr. Franklin, at the same hour on May 7th, 8th, 14th, 15th and 22nd. Admission is without ticket.

The Bayliss-Starling scholarship, of an annual value of about £120, is tenable at University College, and applications are invited before May 12th. The successful candidate will be required to follow a course of training in the principles and methods of research in physiology and/or biochemistry. Particulars will be found in our advertisement columns.

Metropolitan Hospital: Proposed Incorporation

The appeal for £30,000 for repairs and to pay off the debt has produced £22,000. At the recent annual meeting it was decided to incorporate the hospital as a company limited by guarantee. It was stated that the present members of a committee of management might be liable for unlimited sums, a consideration which has recently led to a refusal to serve on the committee.

Salford Royal Hospital

Last year there were 4031 in-patients who stayed on the average 20·48 days. There were 29,459 out-patients, an increase of 1180. Traffic-accident patients cost £1087, of which only £221 was recovered. The out-patients' department, built in 1911, is now inadequate, but lack of means prevents extensions.

Medical Tour in the Rhineland

A medical tour of Rhineland spas is being arranged for Whitsuntide. It will begin on May 18th and end on the 28th. Further particulars may be had from Mr. R. O. Rohme, 90, Sheaveshill-avenue, Colindale, London, N.W.9.

Society for Relief of Widows and Orphans of Medical Men

At a quarterly court of directors held on April 11th the President, Mr. V. Warren Low, being in the chair, an application for relief was considered from the widow of a member who had just died. He had been elected a life member in 1921 and the widow was left practically destitute with nine children, four under 16 years of age. The court voted her a yearly grant of £60 for herself and of £50 a year for each child under 16, a total of £260. She will also receive at Christmas the usual present of £10 for herself and £40 for the four children. Membership of the Society is open to any registered medical practitioner, who at the time of his election is resident within a 20-mile radius of Charing Cross. The annual subscription ranges from two to four guineas, according to the age of the candidate. Particulars from the secretary, at 11, Chandos-street, London, W.1.

Institute of Medical Psychology

This institute in London, formerly called the Tavistock Clinic, has received an anonymous donation of £300 "to start research work on the remedial treatment of children who suffer nervous troubles as an after-effect of assault." It has also received an offer from a medical man who undertakes to bequeath £100 to the institute if 29 other persons will do the same. The arrangement, he suggests, would be a "gentleman's agreement" and the bequests would be revocable in the event of "difficult circumstances."

It is stated that 77 children from London County Council schools have been referred to the institute during the past 12 months, 15 being sent for consultation only. Of those who received treatment, "satisfactory adjustment" was effected in 23 per cent., "partial adjustment" in 16 per cent., while 46 per cent. were still undergoing treatment at the end of the period. The remaining 15 per cent. are described as either unsuitable or affected by uncoöperative parents.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, April 23rd.

Odontology. 8 P.M. Paper. Dr. Franz Duyvensz (Amsterdam): Saliva. Mr. F. W. Broderick will open the subsequent discussion.

TUESDAY.

Medicine. 4 P.M. Clinical Meeting at University College Hospital, W.C. 4 P.M. Cases at the Hospital. 5 P.M. Tea in the Refectory, Medical School. 5.15 P.M. Discussion in the Lecture Theatre of the Medical School. Cases: Dr. F. J. Poynton: 1. Hepatomegaly and Splenomegaly; ? Lymphadenoma. Dr. J. W. McNee: 2. Acute Lymphadenoma with Pleural Effusion. 3. Lead Neuritis. 4. Multiple Neurofibromata. Dr. Kenneth Harris: 5. Chronic Lymphangitis of Face. 6. Chronic Pulmonary Tuberculosis with Generalised Amylosis. 7. Aortic Aneurysm with Portal Cirrhosis. Dr. K. Harris and Dr. P. Kerley: 8. Vena Azygos Lobe with Hæmoptysis. 9. Vena Azygos Lobe in a Child with Chronic Bronchitis. Dr. Saxby Willis: 10. Aortic Aneurysm and Syphilis of Lung. Dr. A. Hall: 11. Congenital Heart-block and Peroneal Atrophy. Mr. G. E. O. Williams: 12 and 13. Pain of Vascular Origin in the Toes Relieved by Alcohol Injection. Mr. C. W. Flemming: 14. Recurrent Abscesses in Neck. Mr. C. Dee Shapland: 15–18. Fundus Oculi Changes of Medical Interest. Dr. L. P. E. Laurent: 19. Myasthenia Gravis (for Dr. C. Bolton). 20. Sarcoma of Spleen and Glands. 21. Granular Kidney following Acute Glomerular Nephritis. 22. Intracranial Aneurysm with Signs of Pressure on Pons. Dr. H. P. Himsworth: 23. Hæmochromatosis. 24. Parathyroid Deficiency. 25. Xanthoma Diabeticorum. Mr. Julian Taylor: 26. Chloroma. Dr. W. J. Pearson: 27. Congenital Morbus Cordis with ? Adherent Pericardium. 28. Hirschsprung's Disease Improved by Sympathectomy.

WEDNESDAY.

Comparative Medicine. 5 P.M. Discussion on the Results of Suture of Divided Nerves, to be opened by Sir Charles Ballance and Prof. John Beattie.

THURSDAY.

Urology. 8.30 P.M. Discussion on Anæsthesia in Urinary Surgery, to be opened by Dr. H. Featherstone and Prof. C. A. Pannett. Members of the Section of Anæsthetics are specially invited to attend.

FRIDAY.

Epidemiology and State Medicine, and Psychiatry. 8 P.M. Special Discussion on the Value of the Treatment of Mental Deficiency, to be opened by Dr. F. C. Shrubsall, Dr. W. Rees Thomas, and Dr. Noel Burke.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, April 23rd.—8.30 P.M., Discussion on Failures of Gastric Surgery, to be introduced by Dr. John Ryle, Mr. A. J. Walton, and Dr. Eustace Callender.

MEDICO-LEGAL SOCIETY.

THURSDAY, April 26th.—8.30 P.M. (at 11, Chandos-street, W.), Mr. Claud Mullins: How Should Sexual Offenders be Dealt With.

SOCIETY OF MEDICAL OFFICERS OF HEALTH, 1, Upper Montague-street, Russell-square, W.C.

FRIDAY, April 27th.—5 P.M. (Fever Hospital Medical Services Group), Discussion on the Relationship of Measles and Whooping-cough to Chronic Inflammatory Conditions of the Chest, to be opened by Dr. C. D. Agassiz, Dr. G. Jessel, and Dr. J. E. McCartney, dealing respectively with the clinical, radiological, and pathological aspects of the subject. Members of the Tuberculosis, School Medical, and M. and C. W. Groups are invited to be present.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY.

WEDNESDAY, April 25th.—5 P.M. (49, Leicester-square, W.C.), Dr. Sibyl G. Horner: Industrial Dermatosis.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, April 23rd, to SUNDAY, April 29th.—BRITISH RED CROSS CLINIC FOR RHEUMATISM, Peto-place, N.W. Tues. and Thurs., at 8.30 P.M. Course in Rheumatism. ROYAL EYE HOSPITAL, St. George's-circus, S.E. Course in Ophthalmology. Afternoons.—SAMARITAN HOSPITAL, Marylebone-road, N.W. Week-end Course in Gynæcology. All day Sat. and Sun.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W. Dr. A. E. Clark-Kennedy: Lecture on Cardiac Irregularity, on Tues., at 2.30 P.M. Dr. Philip Ellman: Lecture on Suppurative Diseases of Lungs, on Wed., at 8.30 P.M. Mr. E. A. Peters: Lecture on Septic Tonsils, Nasopharyngitis, and its Results, on Wed., at 4 P.M. (free to Members and Associates of the Fellowship of Medicine and open to non-members). Dr. Philip Ellman: Lecture on Industrial Diseases of Lungs, on Fri., at 8.30 P.M.—PANEL OF TEACHERS. Individual clinics in various branches of Medicine and Surgery are available daily by arrangement with the Fellowship. Courses of instruction, clinics, &c., arranged by the Fellowship of Medicine are open only to Members and Associates, unless otherwise stated.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

DAILY.—2 P.M., Operations, Medical and Surgical Clinics.

MONDAY, April 23rd.—10 A.M., Skin Clinic, Medical Wards. 11 A.M., Surgical Wards. 2 P.M., Gynæcological and Surgical Wards, Eye and Gynæcological Clinics.

TUESDAY.—10 A.M., Medical Wards. 11 A.M., Surgical Wards. 2 P.M., Throat Clinic. 4.15 P.M., Lecture, Mr. Green-Armytage: Post Maturity.

WEDNESDAY.—10 A.M., Medical Wards, Children's Ward and Clinic. 2 P.M., Eye Clinic.

THURSDAY.—10 A.M., Neurological and Gynæcological Clinics. 11.30 A.M., Fracture Clinic. 2 P.M., Eye and Genito-urinary Clinics. 4.15 P.M., Lecture, Mr. Batchelor: Head Injuries.

FRIDAY.—10 A.M., Skin Clinic. 12 noon, Lecture on Treatment. 2 P.M., Throat Clinic. 4.15 P.M., Lecture, Dr. Konstam: Megalocytic Anæmia.

SATURDAY.—10 A.M., Medical and Surgical Wards, Children's and Surgical Clinics.

The Lectures at 4.15 P.M. are open to all medical practitioners without fee.

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W.

THURSDAY, April 26th.—3 P.M., Dr. Blake Pritchard: Clinical Demonstration.

ST. MARY'S HOSPITAL INSTITUTE OF PATHOLOGY AND RESEARCH, Paddington, W.

THURSDAY, April 26th.—5 P.M., Mr. Hugh W. Bell Cairns: Intracranial Surgery.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, April 25th.—4.30 P.M., Mr. W. K. Irwin: Diagnosis and Treatment of some Important Bladder Conditions.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, April 24th.—3.15 P.M., Dr. C. Gouldesbrough: Spinal Abnormalities.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
MONDAY, April 23rd, to SATURDAY, April 28th.—Second Week of Intensive Course in Laryngology, Rhinology, and Otology.

LEEDS GENERAL INFIRMARY.
TUESDAY, April 24th.—3.30 P.M., Dr. Cooper: X Ray Therapy.

UNIVERSITY OF BIRMINGHAM.
TUESDAY, April 24th.—3.30 to 5 P.M. (at the Children's Hospital), Dr. G. P. Mills: Demonstrations of Orthopædic Cases.
WEDNESDAY, April 25th.—4 P.M. (in the Lecture Theatre of the Medical Faculty Buildings), Prof. E. D. Adrian: The Activity of Nerve Cells. (First of Two Lectures).
THURSDAY.—4 P.M., Dame Louise McIlroy: The Toxæmias of Pregnancy. (First of Two Ingleby Lectures.)
FRIDAY.—3.30 to 5 P.M. (at the Queen's Hospital), Dr. Douglas Marsh: Diseases of the Tonsils and their Appropriate Treatment.

MANCHESTER ROYAL INFIRMARY.
TUESDAY, April 24th.—4.15 P.M., Dr. F. E. Tylecote: Undulant Fever and other Unusual Pyrexias.
FRIDAY.—4.15 P.M., Mr. J. P. Buckley: Demonstration of Surgical Cases.

GLASGOW POST-GRADUATE LECTURES.
WEDNESDAY, April 25th.—4.15 P.M. (at the Royal Infirmary), Mr. J. A. C. Macewen: Surgical Cases.

Appointments

KITSON, J. H., M.B., Ch.B. Manch., has been appointed Medical Officer of Health and School Medical Officer, Todmorden.

London County Council Hospital Staff.—The following appointments, promotions, and transfers are announced. A.M.O. (I.) and (II.)=Assistant Medical Officer, Grades I. and II.
FISH, R. H., M.B. Lond., Senior A.M.O., II., High Wood Hospital for Children.
BEGG, N. D., M.D. Aberd., A.M.O., I., North Eastern.
CUNNINGHAM, A. A., M.B. Dubl., A.M.O., I., Joyce Green.
MACFARLANE, L. H., M.D. Lond., A.M.O., I., Northern.
TAYLOR, I., M.B. Lond., A.M.O., I., Grove.
SCHOLES, J. L., M.D. Melb., A.M.O., II., Queen Mary's Sidcup.
JONES, A. N., M.B. Liverp., A.M.O., II., St. Luke's Chelsea.
TURNBULL, H. I., M.B. Sydney, A.M.O., II., Holborn and Finsbury Institution.
CUSSEN, K. R., M.B. Melb., A.M.O., II., Archway.
CARDNO, J. A., M.B. Aberd., A.M.O., II., St. Mary, Islington.

Certifying Surgeons under the Factory and Workshop Acts: BROMLEY, E., M.B., B.S. Durh. (Arnesby, Leicester); MCMICHAEL, G. B., L.R.C.P. Lond., M.R.C.S. (Vowchurch, Hereford).

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Infirmary.—Asst. M.O. for Radium Dept.
Altrincham General Hospital.—Jun. H.S. At rate of £120.
Ashton-under-Lyne District Infirmary.—Reg. Surg. O. Also H.S. £200 and £150 respectively.
Birmingham, Cancell Babies' Hospital.—Res. M.O. At rate of £250.
Birmingham, Maternity and Child Welfare Dept.—Three Temp. M.O.'s. Each £10 per week.
Birmingham, Selly Oak Hospital.—Cas. O. At rate of £200.
Birmingham University Faculty of Medicine.—Lecturer in Bacteriology. £400.
Bradford Royal Infirmary.—Res. Surg. O. £225. Also H.P. and two H.S.'s. Each at rate of £135.
Bridgend, Glamorgan County Mental Hospital.—Jun. Asst. M.O. £350.
Burnley, Victoria Hospital.—H.P. At rate of £150.
Cardiff Royal Infirmary.—H.P. and H.S. Each at rate of £50.
Cheltenham General and Eye Hospital.—H.S. £200.
Chester Royal Infirmary.—Hon. Asst. Radiologist.
Dewsbury and District General Infirmary.—Part-time Hon. Pathologist.
Durham County Hospital.—H.S. £150.
Golden Square Throat, Nose, and Ear Hospital, Golden-square, W.—H.S. £100.
Grimsby Corporation Hospital and Sanatorium.—Res. Med. Asst. £350.
Guy's Hospital Dental School, S.E.—Dental Travelling Scholarship. £250.
Hackney Hospital, High-street, Homerton, E.—Asst. M.O. £250.
Hospital for Sick Children, Great Ormond-street, W.C.—Physician to Out-patients. Also Surgeon.
Hove General Hospital.—Res. M.O. At rate of £200.
Huddersfield Royal Infirmary.—Jun. Cas. O. and Res. Anæsthetist. At rate of £150.
Ilford, King George Hospital.—H.S. At rate of £100.
Indian State Railways.—Dist. Med. Officers.
Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.
Italian Hospital, Queen-square, W.C.—Hon. Asst. Phy.
Keighley Borough Council.—Asst. M.O.H. and Asst. School M.O. £500.
King's College Hospital, Denmark Hill, S.E.—Hon. Radiologist.
Lancaster Royal Infirmary.—Jun. H.S. At rate of £130.
Leicester, Leicestershire and Rutland Mental Hospital, Narborough. Asst. M.O. £350.
Liverpool Port Sanitary Authority.—Port Sanitary Officer. £700.
Llanelly and District Hospital.—H.S. £150.
London Lock Hospital, 91, Dean-street, W.—Res. M.O. to Male Depts. At rate of £175
London University.—Geoffrey Duveen Travelling Studentship. £450.
Margate Royal Sea-Bathing Hospital.—Res. Asst. Med. Supt. £500.
Middlesex County Council.—Dist. M.O.'s and Public Vaccinators. Each £50.
Mile End Hospital, Bancroft-road, E.—Asst. M.O. £250
Nottingham General Hospital.—H.P. At rate of £150.
Oldham Royal Infirmary.—H.S., Cas. O., and H.P. Each at rate of £175.
Paddington Hospital, Harrow-road, W.—Asst. M.O. £250.
Preston and County of Lancaster Royal Infirmary.—H.S. £150.
Queen Mary's Hospital for the East End, E.—Director of Pathology. £750.
Queen's Hospital for Children, Hackney-road, E.—Res. M.O. At rate of £200.
Rotherham Hospital.—Cas. H.S. £150.
Royal Free Hospital, Gray's Inn-road, W.C.—Sen. Res. M.O. £150.
Royal Northern Hospital, Holloway, N.—Clin. Asst. for Med. Out-Patient Dept.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. At rate of £100.
Sheffield Royal Hospital.—Ophth. H.S. £120.
Southend Municipal Hospital.—Asst. M.O. £275.
South Shields, Ingham Infirmary.—Jun. H.S. £150.
St. Bartholomew's Hospital, E.C.—Asst. M.O. to X Ray Dept.
St. Mary's Hospital for Women and Children, Plaistow, E.—Clin. Asst. to Gynæcological Dept.
St. Nicholas Hospital, Plumstead, S.E.—Asst. M.O. £250.
St. Peter's Hospital, Vallance-road, E.—Asst. M.O. £250.
Stoke-on-Trent, North Staffordshire Royal Infirmary.—Orthopædic H.S. £150.
Sunderland Municipal Hospital.—Res. Asst. M.O. £200.
Sunderland Royal Infirmary.—H.S. £200.
Swansea County Borough.—Asst. M.O. £500.
Swansea Valley, Adelina Patti Hospital, Craig-y-nos.—H.P. At rate of £100.
University College, W.C.—Bayliss-Starling Memorial Scholarship. £120.
West End Hospital for Nervous Diseases, Gloucester Gate, Regent's Park, N.W.—H.P. At rate of £150.
West London Hospital, Hammersmith-road, W.—Hon. Dermatologist. Also Hon. Asst. Anæsthetist.
Westminster Hospital, Broad-sanctuary, S.W.—H.S. to Spec. Depts. At rate of £104.
Wolverhampton Royal Hospital.—H.S. At rate of £100.
Wolverhampton and Midland Counties Eye Infirmary.—H.S. £150.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Clacton-on-Sea, Essex; and Tewkesbury, Gloucester.

The Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act for the Kirkcaldy Sheriff Court District of the Sheriffdom of Fife and Kinross. Applications should reach the Private Secretary, Scottish Office, Whitehall, London, S.W., not later than May 5th.

Births, Marriages, and Deaths

BIRTHS

ELDER.—On April 15th, at Welbeck-street, W., the wife of Howard Elder, M.B., Ch.B., South Norwood, S.E., of a daughter.

EVANS.—On April 14th, at Devonshire-place, W., the wife of Dr. Horace Evans, of a daughter.

GELDARD.—On April 8th, at "Dalmeny," Sheringham, the wife of Dr. Colin Geldard, of a daughter.

MATHESON.—On April 8th, at "Eversley," Boxley-road, Maidstone, the wife of Major J. C. M. Matheson, D.S.O., M.B., Ch.B., of a daughter.

WILSON.—On April 11th, at High-street, Linton, Cambs, the wife of Dr. Hugh Mundle Wilson, of a son.

MARRIAGES

BOYLE—SCOTT.—On April 2nd, at St. John's Church, Choriton-cum-Hardy, Manchester, Major H. A. Boyle, R.A.M.C., to Evelyn Maude, elder daughter of Mr. and Mrs. J. N. Scott, of Choriton-ville, Manchester.

BYROM—PRITCHARD.—On April 9th, at the Register Office, Hampstead, Frank Burnet Byrom, only son of Mr. and Mrs. T. H. Byrom, of Selby Bridge, I.O.M., and Wigan, Lancs, to Kathleen Joyce Pritchard, only daughter of Mr. and Mrs. Stanger Pritchard, of Cyprus-avenue, Church End, Finchley.

DEATHS

BERRY.—On April 15th, at Bramblebury, near Wendover, Frances May Dickinson Berry, M.D., beloved wife of Sir James Berry, F.R.C.S., aged 76.

BROWN.—On April 8th, Frederick Nathaniel Brown, L.R.C.P., M.R.C.S., Hale Cottage, Sandbanks-road Parkstone, Dorset.

KEITH.—On April 8th, at Comely Bank, Edinburgh, after a short illness, Martha Keith, M.B., Ch.B., D.P.H.

SANDERSON.—On April 15th, at Croxteth-grove, Liverpool, William Sanderson, M.B., Ch.B. Edin.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

PETER DE ALCOBASSE
PHYSICIAN TO HENRY IV.

By R. R. James

On Dec. 14, 1420, Peter de Alcobasse had a grant of denization recorded on the Patent Roll of 8, Henry V, m. 5. It is stated that he was born in Portugal; his grant was under the privy seal and he appears to have paid the sum of £30 into the hanaper [1] for the privilege. Besides this he also appears on the Patent Rolls in the year 1412, Feb. 7, where it is recorded that the King had granted him the prebend of West Thurrock in the Free Chapel of Hastynges; while on Feb. 29, 1412, there is another grant to him, as the King's servant and physician, of the Deanery of Wymburnemynster (Wimborne). Still later in 1412 occurs the mandate to the Dean and Chapter of the King's free chapel of Hastynges to admit and induct the King's physician, Peter Acobasse (*sic*), to the prebend of West Thurrock and to assign to him a stall in the choir and a place in the Chapter. This grant by Henry IV landed poor Peter in trouble in the Court of Chancery in the next reign as will be seen later.

Hutchins, "Hist. of Dorset," vol. III, p. 187, gives: "Peter de Altobasso—or bosco, an Italian, the King's physician, admitted Dean of Wimborne, 29 April, 1412." It is also stated that Peter was Prebendary of Hoxton in St. Paul's, London, in 1420, and of Windsor in 1415; and that he seems to have resigned Wimborne in 1415. The manuscript medical court roll of the late Dr. S. D. Clippingdale, preserved in the library of the Royal College of Surgeons, gives him as Prebendary of St. George's, Windsor, Dec. 21, 1422, vice John Eston, deceased. The reference is to Rymer's "Foedera."

Peter died in 1427. His will, in Latin, would appear to be the earliest medical will preserved in the P.C.C.; there are several points of interest in it, notably the description of "magister in medicinis." The following is the translation:—

Peter de Alcobascho. (P.C.C., Luffenham, 8.) In the name of God Amen: Thursday next after the Feast of St. Dunstan (i.e., May 19) 1427 I Peter de Alcobascho Master in Medicines of good and sound memory make my testament in this manner. *In primis* I leave my soul to God Almighty, the Blessed Mary and all Saints and my body to be buried in the church of the order of Friar Preachers. I leave to the aforesaid church for my sepulture 20s. I leave to William Denys my servant (*famula*) £20 and one good (*meliore*) piece of silver with a cover, 1 cloak of sanguine (sangwen) furred with marten. I leave to John Wally £10, 1 covered piece, 1 scotch horse and a furred cloak (*toga*). Item I leave to John Cokerman £10, 1 covered piece and a green cloak and a horse called "oldebayard." Item I leave to Ralph Bolde £10, and 1 piece covered and a furred cloak and 1 horse. Item I leave to William Glouceter £10. To Thomas Belle 10 marks 9 shillings. To Thomas lestaville 6 marks and a horse. I leave to Richard my *Capanus* [2] £10 and a horse and a covered piece. To William Barbour 10 marks and an uncovered piece; to Robert de Stabill 6 marks; to Alice Jorge 20s., to Agnes Cornewales 10 marks. To William Sikyltrys, chaplain, 1 mark. To John Carter of Plumsted 2 marks 1d.; to the widow of Richard Clerk my servant 6 marks; to the bedewoman of St. Katherine 9s. To the wife of Robert Notyngham 10 marks. The Residue of all my goods not left in the present testament I give and leave my executors, viz., Thomas Chawcers, Lodovic Johan, Thomas Walsyngham, John Cornewales and Richard Drake, Chaplain, that they do not neglect to dispose in the best manner thay are able for the good of my soul. Proved, 30, June, before Master John Lyndefeld, Commissary.

On the Close Roll of 2, Henry V, May 3 is found mention of the lawsuit of Thomas Feriby, clerk, otherwise priest, against Peter for thrusting him out of his prebend of West Thurrock. It is too long for insertion here; but from Feriby's petition it would appear that he was appointed to the prebend, vacant by the death of John Harmesthorpe, "being a prebend in the King's free chapel of Hastyng in the diocese of Cicestre, and in the gift of William Bourgchier, Knight, in right of Anne his wife, daughter and heir of Eleanor, Duchess of Gloucester." Feriby enjoyed his prebend "peaceably until unlawfully thrust out by the said Peter, by colour of the late King's collation to him . . . at the untrue submission of the said Peter that the same was void, when it was not, and in the King's gift, which it was not." The Sheriff of Essex had notice to make Peter appear in Chancery to show cause why he should not be made to give the prebend back to Feriby. The latter appeared in person and Peter by his attorney, John Corve, who averred that by letters patent dated at Westminster 7, Feb. 13 Henry IV the late King gave him the prebend, being then void and in his gift. The result of the action is not recorded.

I am indebted to Mr. J. Harvey Bloom for the transcript of the will and for the extracts from the Patent and Close Rolls.

[1] Hanaper: an office of the Court of Chancery (Trice Martin's Record Interpreter).

[2] A contraction for Capellanus, a chaplain.

RADIOGRAPHY OF LIVING ANATOMY

In a paper read recently before the Rugby and District Medical Society Dr. J. F. Brailsford, who is radiological demonstrator in living anatomy in the University of Birmingham, demonstrated some of the radiographic appearances of normal structures which have led to serious misinterpretation.

In radiography of the skull the slightest obliquity may result in the dense structure of the base obscuring the normal accessory sinuses on one side, and this may lead to the error of diagnosing that the sinus is occluded. The dense shadow of the petrous portion of the temporal bone may be projected through the plane of the antrum and its straight upper surface may be misinterpreted as a fluid level. An unusual instance of misinterpretation of the normal was as follows:—

A child with a swelling at the angle of the mandible was X rayed and the radiogram was interpreted as showing a sarcoma. A surgeon was consulted and resection of the involved bone was decided upon. Immediately before the operation the surgeon asked me if I could give him an indication of the boundary of the tumour so that he could gauge what length of bone he must remove from the crest of the ilium to form a graft. It was demonstrated to him that the radiogram showed normal structures only. The shadow of the hyoid bone projected against the mandible had suggested a tumour. A few days later the swelling was explained as an attack of mumps.

In radiography of the thorax it is essential for comparative pictures to be taken in the same phase of respiration. Another source of fallacy arises from the fact that structures in close contact with the film appear denser than the surrounding tissues owing to being screened from secondary radiation.

A patient was radiographed at a tuberculosis clinic and the diagnosis of bilateral spontaneous pneumothorax made. Examination of the radiograms suggested that further films should be taken, one with reduced pressure against the breasts, and another with the film barely touching the patient. These proved that the abnormal shadows were due to the contact cutting out secondary radiations and consequently reducing the density of the protected part.

In radiography of the alimentary canal it is essential before any opaque medium is introduced to make sure that no abnormal shadows exist which might be obscured by it. In making the gall-bladder visible by substances excreted in the bile and making it denser

than the surrounding structures, negative shadows—e.g., of gall-stones—may be simulated by bubbles of gas in the duodenum.

CINERADIOGRAPHY

Owing to the limited time permissible during screening and the limited area which the observer can watch, this method of demonstration is by no means ideal for teaching purposes. What we need, said Dr. Brailsford, is a carefully edited cineradiographic film study of the viscera. This was recognised by Dr. John MacIntyre in 1896, a few months after Röntgen's discovery, and he exhibited a 40-ft. film showing the movements of the bones of a frog's leg to the Glasgow Philosophical Society in that year, and in the *Archives of Skiagraphy* for April, 1897, he described further experiments. In this country Dr. Russell Reynolds had developed indirect cineradiography. More recently Prof. Robert Janker at Bonn had advanced the method to such an extent as to give early hope of using cineradiography in teaching living anatomy.

In the direct method the patient is placed in front of an X ray tube and against a leaded screen containing a window opposite the area to be radiographed. Behind the screen a large film of the necessary size is fixed on rollers and the timing of exposure so devised that at least 16 exposures per second can be made on the rapidly changing surface. From the film obtained reduced films capable of fitting into a cineprojector would have to be made. The large contact films permit a study of the changes in form better than the small films obtained in the indirect method, but the cost is considerable, and while the method may be used for the production of standard teaching films it can hardly come into general use. Simpler devices facilitate a dozen or more exposures within a short time, useful in the examination of stomach and duodenum. A modification of this direct method for recording the movements of the heart was described by Robert Knox in 1925.

In the indirect method a cinephotographic record of the images is produced on the fluorescent screen. The screen image must be sharply defined and there must be no afterglow. By this method Janker has been able to make films little inferior to those obtained by the direct method but at a trifling cost. The intervals between each exposure will determine the rapidity (when shown in the cineprojector) of the movements of the structures examined.

These methods, said Dr. Brailsford, should solve many of the problems of visceral movement. The movements of the heart in diastole and systole during expiration and inspiration could be analysed. The peristalsis of the alimentary canal could be determined with accuracy and the movements of joints in this better than in any other way.

ACUTE SEPSIS IN THROAT AND EAR

In the *Annales d'otolaryngologie* (1933, No. 12) G. Worms and A. Deburge report the case of a young man in whom an attack of tonsillitis was followed by sudden intense dysphagia and dyspnœa necessitating tracheotomy. There was great œdema of the vestibule of the larynx, the epiglottis, and the aryteno-epiglottidean folds; incision of the latter with curved scissors gave immediate and dramatic relief of the pain. The patient's rapid recovery is ascribed in part to drainage by the tracheotomy incision, from which there was a profuse and foul discharge. To the same journal J. Piquet and P. Coumouma contribute an interesting article on lateral pharyngeal abscess. This is to be distinguished from peritonsillar abscess, in that it is situated externally to the wall of the pharynx and arises in lymph glands about the carotid sheath. It is ordinarily treated by incision through the neck, and any attempt to open it through the mouth is considered very dangerous by reason of the risk of injury to the great vessels; but these authors find that in children the abscess tends to point in the pharynx behind the posterior pillar of the fauces, and may safely be opened in this situation by means of sinus forceps.

D. van Caneghem, of Bruges, also in this issue, reports that he has made a careful investigation into the pressure of the cerebro-spinal fluid in extradural complications of otitis media. In cases of acute mastoiditis, he finds that extradural abscess almost always causes an increase of pressure to above 30 cm. of water, and he believes that extradural abscess should be regarded as probably present in any case which shows this degree of hypertension.

THE LA-TOJA SPA

THE therapeutic claims of the La-Toja Spa were brought to the attention of the medical profession last week by the opening of an installation in connexion with the Spa at Sunderland House, Curzon-street, London, by the Spanish Ambassador. Major P. C. Burton, in welcoming Don Ramón Perez de Ayala, gave reasons for his personal conviction that real medical needs would be met by making the La-Toja treatment available for the relief of rheumatism and allied complaints, and his Excellency in declaring the Spa open expressed his sympathy with the movement as being of therapeutic value while forming a link in the historic friendship between two nations. The La-Toja Spa is near Vigo, and the intention of the London establishment is to make its products available for home treatment on medical advice.

IS PASTEURISATION A COMPLETE SAFEGUARD?

AT a recent sessional meeting of the Royal Sanitary Institute (Jour. R.S.I., April, 1934, p. 486) Mr. Ben Davies said the great thing was to give people confidence in milk so that they should drink more. "With a few ounces of extra daily consumption per capita, the reason for marketing boards and government intervention would disappear." Against the dangers from tuberculosis, abortus fever, and mastitis, he said, we had "a positive and unfailing safeguard" in pasteurisation. Sir W. Dalrymple-Champneys agreed with him that pasteurisation if efficient was a positive and unfailing safeguard; most pasteurisation he had seen was, he added, inefficient. Compulsory pasteurisation not being at present attainable, he thought the best line of immediate advance was that recently contemplated in Manchester—viz., to exclude from the city all but pasteurised milk and that from tubercle-tested herds.

NEW PREPARATIONS

ANTIVIRIN NASAL JELLY (Glaxo Laboratories, 56, Osnaburgh-street, London, N.W.).—The organisms found in the nasopharynx in cases of the common cold are attacked by this preparation. Owing to its viscosity the jelly penetrates the folds of the mucous membrane and brings the appropriate antiviruses into contact with the organisms. Small quantities of Nasal Jelly should be squeezed into the nostrils several times a day, far back enough to bring some of the jelly in contact with the pharyngeal mucous membrane. The treatment should begin, if possible, at the onset of a cold, but is still useful when the condition is advanced.

BURNOL ACRIFLAVINE CREAM (Boots Pure Drug Co., Ltd., Nottingham).—This is a surgical dressing non-toxic, antiseptic, and readily applied; it is absorbent and redressings are easily effected without damage to the healing tissues. The manufacturers claim that its use has given excellent results in the treatment of cuts and grazes; herpes, impetigo, and infective skin conditions; styes and infective conditions of the eyelids; blisters on feet or hands; sunburn; cracked skin and chapped hands. The cream is put up in convenient tubes, and full particulars of application are supplied with each tube.

THE MARMITE FOOD EXTRACT CO. LTD. inform us that as the result of biological tests carried out by a recognised authority, they are now able to state that the vitamin B_1 potency of their product is 840 international units per ounce. This information is of interest in view of recent correspondence in our columns (see THE LANCET, Jan. 13th, p. 104, and Feb. 3rd, p. 261).